

Food security and Food Sovereignty in Tarija- Bolivia: Public Policy Opportunities and Challenges in Rural Communities

by

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B.A. (Political Science), Simon Fraser University, 2009

RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF PUBLIC POLICY

in the
School of Public Policy
Faculty of Arts and Social Sciences

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SIMON FRASER UNIVERSITY
Fall 2012

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Abstract

Insufficient access to water, seeds and agricultural resources, as well as low levels of education and other economic means, have affected food security levels of campesinos (peasants) in rural municipalities in Bolivia. This study, using quantitative research (household survey), assesses the demographic, economic, agricultural characteristics of 96 campesino households. Moreover, through qualitative research (interviews and document analysis), the study examines the current national policy framework and the municipal capacity to implement projects that improve campesino food security levels. Using food sovereignty as a framework, the research suggests four policy alternatives to improve agroecological productivity among rural households. Based on the analysis of all policy options, the research recommends that municipalities increase investments in agricultural productivity projects, starting by enhancing current school feeding programs.

Keywords: Food security; Food Sovereignty; Campesino Agriculture; Agro-ecology; Bolivia-Tarija

*A todos los campesinos de Bolivia, por su
sacrificio y amor a la Pachamama*

Acknowledgements

First of all I would like to thank all the people in Tarija and La Paz that helped me during my research. This research would not have been possible without the help from all the exceptional staff at IICCA, especially its Director Mr. Jaime Gumiel. I would also like to thank the campesino leaders, mayors and agronomists, and the NGO workers at CARITAS, ASOCIO and AIPE. Thanks to all the campesino families who took the time to participate in the survey.

I would also like to thank Gretchen Hernandez and John Brohman from the Centre for Sustainable Community Development and the CED Bolivia Project, for helping me to secure an internship in Bolivia and providing some of the funding necessary to complete this research.

I want to express my gratitude to my capstone supervisor, Maureen Maloney, for her guidance, perspective and advice. I would also like to thank Royce Koop for giving me helpful feedback and recommendations.

Thanks to Nancy Olewiler, the Director of the School of Public Policy, for her support and funding for this research, as well as all the professors and staff who made these two years a truly wonderful experience. I would also like to thank my classmates; they were my family during this time and they provided valuable advice through the program.

Finally, I would like to thank my family, for their support, care and unconditional love. Special thanks to Natalia for being my companion, friend, and editor. Thanks for her smile and love even during those times when stress levels were critical.

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List of Acronyms

CAC	Campesino a Campesino
CNAPE	Consejo Nacional de Producción Ecológica
DMT	Direct Money Transfers
FAO	Food and Agriculture Organization
FSS	Food security Scale
GNI/GNP	Gross National Income/Product
IBGE	Instituto Brasileiro de Geografía y Estadística
IICCA	Instituto de Investigación y Capacitación Campesina
IDH	Impuesto Directo a los Hidrocarburos (Hydrocarbons Direct Tax)
IMF	International Monetary Fund
INE	Instituto Nacional de Estadística (Bolivia)
MACAC	Movimiento Agroecológico Campesino a Campesino
MDG	Millennium Development Goals
NDP	National Development Plan
NGO	Non-governmental Organization
FSAS	Food security Assessment Scale
POA	Plan Operativo Anual (Annual Operative Plan)
PROSOL	Progreso Solidario (Departmental Grant)
SFP	School Feeding Program
RTF	Risk Transfers Fund
TDP	Territorial Development Plan
UN	United Nations
UNICEF	United Nations Children's Fund
USDA	United States Development Agency
WB	World Bank
WFP	World Food Program

Executive Summary

Current studies about the levels of food security in rural communities in Bolivia suggest that *campesinos* are some of the most affected groups in the country. This research studies the existing levels of food security in four rural municipalities in Tarija-Bolivia and the current policy framework of the Bolivian government, the food sovereignty approach. The main objective of the study is to analyze how policy at the national level is being implemented at the municipal and community level. Based on the findings, policy alternatives are recommended that could help improve the current situation in campesino households.

This study uses a mixed research approach of both qualitative and quantitative methods to analyze the current policy environment, capacity and implementation. The main findings of this study are:

- Current levels of food insecurity in the Mancomunidad 'Héroes de la Independencia' are high. This situation is aggravated by low agricultural productive, lack of income sources and low levels of education among campesinos.
- The current policy framework of the Bolivian government towards food sovereignty, is a different approach to the food security problem in rural municipalities that aims to improve the food access while ensuring the community economic development of *campesino* communities.
- Unfortunately, the policy capacity and implementation at the local level makes it difficult for a significant change in campesino households, and according to most policy actors, more needs to be done at all levels of government (national, municipal, community).

Based on the findings, the study recommends municipalities increase the amount of resources spent on agricultural productivity projects at the community level. Four policy alternatives are further analyzed: 1) enhanced school feeding programs; 2) campesino a campesino initiatives; 3) direct money transfers; and 4) large infrastructure

projects. Although all the alternatives should be implemented in the long term by local governments, based on four policy criteria (cost, participation, effectiveness and implementation ease), the study recommends the immediate implementation of enhanced school feeding programs as the first step towards food security and sovereignty improvement in campesino communities in the region.

1. Introduction

According to the most recent study conducted by the World Food Program (WFP), 44% of Bolivian municipalities (almost half of Bolivia's population) present severe or highly severe levels of food insecurity (2008, p. 15). The majority are rural municipalities that have little or no access to water, seeds, agricultural resources, and very low levels of education. These conditions have forced households to survive with very low levels of agricultural productivity, consuming the majority of what they produce, and with no access to other income sources (subsistence agriculture).

As a response to this situation, in February 2009 the Plurinational State of Bolivia adopted a new constitution that restructures the economic organization of the state and “[g]uarantees food security and food sovereignty, prioritizing the production and the consumption of agricultural food originating in Bolivian territory” (Article 407, literal I of the Constitution of the Plurinational State of Bolivia). Accordingly, the Bolivian state is responsible for improving the agricultural productivity of the country, and the access and availability of food produced locally, through the economic development and participation of *campesino* (peasant) communities in all regions. However, many rural municipalities have not benefited from the current constitutional and legal changes because they do not have the capabilities to implement policies and projects. For this reason, it is important to take a look at the type of policies that can be potentially applied, taking into consideration the constitutional food sovereignty framework and the characteristics of each community.

This study investigates the current conditions of food security in seventeen *campesino* communities (with a sample of 96 households) that live in the commonwealth ‘Héroes de la Independencia’, located in the Department of Tarija, Southeast of Bolivia. The main objective of the research is to identify some of the variables that contribute to the level of food security (or food insecurity) in these communities, and recommend public policy alternatives for the municipalities based on the food sovereignty framework

of the Bolivian constitution. The research is based on both qualitative (interviews and document analysis) and quantitative (surveys) research methods, which helped to identify the best policy alternatives and to recommend the most appropriate policy options.

The rest of the research is organized in eight parts. Section 2 of the paper discusses the evolution of the food security and food sovereignty concepts and how they help contextualize the food problem and promote possible solutions. It also provides background information on the food problem in Bolivia, and the Mancomunidad 'Héroes de la Independencia'. Then, Section 3 provides a detailed description of the research's different methodologies and its limitations. Section 4 presents the analysis and Section 5 the main findings and policy implications. Section 6 outlines the policy objectives, criteria and measures. Section 7 details the policy options and the analyses, while Section 8 summarizes the policy recommendations. Finally, Section 9 provides the conclusion of the research and a reflection on further questions raised by the study, those which could not be addressed but that may be useful areas for future research.

2. The food problem: from food security to food sovereignty

In 2000, all members of the United Nations (UN) established eight international development goals to be achieved by 2015, known as the Millennium Development Goals (MDG). The first of these eight goals is to 'eradicate extreme poverty and hunger', and more specifically, to 'halve the proportion of people who suffer from hunger' (UN.org, 2011). Unfortunately, eleven years after the goals were established, the MDG Monitor shows that almost "ten million people [have] died every year of hunger and hunger-related diseases, [and] [r]ising food prices may push one hundred million people deeper into poverty." (mdgmonitor.org, 2011). Vulnerable populations are at the highest risk according to Anthony Shorrocks, Director of the United Nations University - World Institute for Development Economics Research (UNU-WIDER), who adds that "as many as 2.8 million children and 300,000 women die needlessly every year because of malnutrition in developing countries" (Guha-Khasnobis, Acharya & Davis, 2007, p. v).

2.1. Evolution of the concept of food security

The current analytical framework used to analyze the food problem is the concept of food security. In 1974, following one of the worst food crisis in the world, international organizations such as Food and Agriculture Organization (FAO), the UN, and World Food Council, defined food security for the first time as the "system which would ensure adequate availability of, and reasonable prices for, food at all times, irrespective of periodic fluctuations and vagaries of weather and free of political and economic pressures..." (Fairbairn, 2010, p. 22). From this perspective, food security is an international and macroeconomic problem of supply and demand, where world food stocks should be protected internationally against crop failures and shortfalls. The solution then is presented as the industrialization of national agriculture and the use of food aid in countries facing shortages. In other words, food security is about controlling

world food supplies through “market interventions, increased production and external food aid” (Fainbairne, 2010, p. 23).

The concept of food security, however, has “evolved, developed, multiplied and diversified” since it was first used in the World Food Conference of 1974 (Maxwell, 1996, p. 155). Smith, Pointing, and Maxwell (1992) found that there are approximately two hundred different definitions of the term, and like poverty, it is a complex and multifaceted phenomenon. Depending on how food security is defined, there could be many different measurements and evaluative methodologies “even within the boundaries of the qualitative and quantitative traditions” (Migotto *et al.*, 2007, p. 15). Not only that, but the way the concept is framed has important repercussions for how agricultural and food policy is developed and challenged (Wittman, 2011, p.91). According to Simon Maxwell (1996), since it was first coined, the concept of food security has changed in three major analytical ways: 1) from global and national levels to household and individual levels, 2) from a ‘food first’ to a ‘livelihood’ perspective, and, 3) from objective indicators to subjective perception. The discussion will now turn to the term’s evolution in the last decades.

During the late 1970s and early 1980s, academics such as Amartya Sen criticized the previous conceptual approach to food security because in many parts of the world the problem is not about adequate supply of food, but of ‘food entitlement’. In his book *Poverty and Famines*, the Nobel Prize economist demonstrates that national food availability does not translate into household food access (Maxwell, 1996; Fairbain, 2010). This paradigm shift, presented by Sen and others, focuses the attention of food security to the micro level, the household. Furthermore, Sen’s work also demonstrates that within the household there are problems of food allocation which most commonly favours males, opening the debate to discussion of gender inequality. Following this change in logic, the definition of food security was refined to be the “access by all people at all times to enough food for an active, healthy life” (World Bank, 1986, p.1). The new definition moved away from state-centered policies (encouraged by the WB and IMF) to stressing the importance of the individual at the household level.

Another important shift within the concept of food security is to look at food not only as a basic necessity, but as part of a livelihood approach. Although food is a

fundamental need for human subsistence, studies show that “short-term nutritional intake is only one of the objectives people pursue” (Maxwell, 1996, p.158). This means that it is not uncommon for people to go hungry in order to ensure the availability of other assets in the future. Therefore, food security is not only a primary need that must be satiated, but a condition for which individuals and households have developed strategies to enable them to overcome critical situations when the amount of food is inadequate. For example, in some cases people endure the feeling of hunger, to save seeds for planting or avoid having to sell an animal. In other words, “there is a broader issue of livelihood at stake, in which objectives other than nutritional adequacy are pursued” (Maxwell, 1996, p.158).

The third shift that Maxwell mentions is the use of subjective perception as opposed to objective indicators to study the issue of food insecurity. Positivist approaches analyse the problem through quantitative/objective indicators such as: levels of calorie intake in populations and adequate supply of nutritional food (rich in vitamins and minerals). However, many critics have argued that any measure of what is considered ‘adequate consumption of food’ depends on many social, economic, political and cultural factors such as age, health, income, workload, and environment (Maxwell, 1996). The problem of a ‘one size fits all’ definition of food security is the fear that it might lead to the prescription of inappropriate policy alternatives in different social, economic and political contexts.

Keeping in mind the evolution of the concept mentioned above, FAO’s most recent definition of food security describes it as the condition in which “all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, that meets their dietary needs and food preferences for an active and healthy life (FAO, 2010, p.8). According to Migotto *et al.* (2007), the concept above can be “[c]onceptually [...] broken down into four different components – availability, access, utilization, and vulnerability- each capturing different but overlapping, dimensions of the phenomenon” (p.15). These four dimensions are measured at the national, municipal or household levels and each of them have different indicators to quantify levels of insecurity.

Availability refers to the supply of food and is commonly measured using aggregate food supply data at the national household level. Food availability is normally

measured using macroeconomic indicators such as agricultural production and national food stocks.

Access refers to the adequate financial or productive resources that a household needs to acquire food. Economic indicators such as wealth, total consumption, expenditures or income are commonly used measures for this dimension. For this reason, availability of food does not necessarily translate to access, since individuals might have food available to them, but not the means to purchase it.

Utilization or *use* generally refers to the adequate consumption of nutritious food. Households can have access to certain type of foods, but they might still face dietary deficiencies of vitamins or micronutrients due to the lack of vegetables and fruits in their diets. The most common measures of food utilization are surveys of anthropometrical measures of children under five, such as weight and height for their ages.

Vulnerability includes a temporal dimension, making the concept inherently dynamic as it tries to measure the possibility of whether a household, which although not currently undernourished, might face a situation of food deprivation. Of all the dimensions, vulnerability is the most difficult to measure as it attempts to measure the future state of the household. The most frequent method to assess vulnerability is qualitative surveys that measure the household's perception or self-assessment "on food-related behaviors and conditions that are known to be associated with food deprivation" (Migotto et al., 2007, p.17).

Many critics have labelled the current food regime as 'neoliberal', 'corporate' and 'corporate-environmental', responding to the constant financialization, liberalization and corporatization of global food networks (Wittman, 2011; Fairbairn; 2010). Policy analysts and international organizations such as FAO, the WB, and the International Monetary Fund (IMF), develop their policies and government recommendations to alleviate food insecurity based on this neoliberal model in which food is treated as a market commodity (Fairbairn, 2010, p.25). In other words, although the framing of the problem moved from the national level to a household level, market considerations continue to play a big role in the creation of policy, or, as FAO's *Investing in Food security* report (1997) asserts: "governments have a key role to play in creating, through correct policies, an

environment which encourages investment leading to food security... characterized by political stability, good infrastructure, liberal trade policies, an effective legal framework and social safety nets for the poorest” (p.16). The current definition of food security “treats food as a problem of insufficient trade rather than hunger by privileging access to food rather than *control over* systems of production and consumption” (Wittman, 2011, p.91). One of the paradigm shifts which challenges the rules and relations of a corporate or neoliberal food regime is the concept of food sovereignty described in the section below.

2.2. Food sovereignty paradigm

During the 1990’s a countermovement to the traditional world economic organizations, called ‘La Via Campesina’¹, proposed a new vision which values relations, a rights-based approach, and a shift from the market logic to ecological sustainability (McMichael, 2010). Wittman (2011) argues that the food sovereignty movement was a reaction to the neoliberal policies of the 80’s, such as structural adjustment, trade liberalization, and export oriented agricultural models. In simple terms, food sovereignty is the right of people to make decisions regarding the production of their own food, agriculture, livestock and fisheries, without the intervention of globalizing market forces. The food sovereignty paradigm advocates moving away from the agribusiness and corporate model of food production, to a network of small farmers or campesinos for the sustainable production of food using ecological production and reducing the amount of energy waste produced by the old model. Governments, according to this new

¹ A transnational organization formed by small producers, peasants and farm workers from around the world.

framework, should support small farmers and protect the production of local foods, at the community level.

One of the primary objectives of the food sovereignty movement is to challenge the current status quo of food production in the market system. Advocates want to bring back the political aspect to the production of food and highlight who are the primary winners (corporations) and losers (campesinos) in the current system. Author Madeleine Fairbairn (2010), notes that although food sovereignty “is unlikely to encounter any immediate success in instituting the new food regime that its advocates desire, it does have the potential to destabilize the corporate food regime” (p.31). For example, the food sovereignty movement is currently reframing the agrarian questions by raising doubts in the current system of agricultural monoculture, fuel dependency and environmental degradation and whether this should or can be maintained for future generations.

The food sovereignty approach “devolves more responsibility and decision making power to farmers, indigenous peoples, food workers, consumers and citizens for the production of social and ecological knowledge” (Dreyfus, 2009, p. 114, cited in Wittman 2011, p. 92). Food sovereignty promotes a democratization of agriculture through sustainable and ecological practices in a time of energy and climate emergencies (McMichael, 2010, p.173). This approach has serious implications for public policy because it redirects the attention away from the expansion and protection of large farming corporations to the distribution of land to small farmers. Studies by authors like Peter Rosset (2000) and Miguel Altieri (2010) have demonstrated that small farmers in Latin America are more productive, more efficient and contribute more to economic development than the large mono-cropping agribusiness estates.

The current food security approach, based on the corporate/neoliberal regime, focuses on food aid and technological development to improve global food production. On the other hand, food sovereignty addresses the problem by “advocating more localized control over food and agricultural policy” (Wittman, 2011, p.91). Emerging policies and projects that encourage and promote small farmers agroecological production represent an important change since the agrarian reforms in Latin America in the 1950s. Some authors argue that food sovereignty is not only a new framework or

paradigm, but a precondition for an authentic system of food security (Afonso, 2007, p.16). Table 1 below outlines some of the differences between the two food regimes.

Table 1 Food Security/Food Sovereignty comparison

	Corporate/Neo-liberal	Food Sovereignty Regime
Feeding the world	Intensive production based on countries comparative advantage	Local agriculture and protection of local markets No dumping/subsidized food
Role of agriculture in national development	Increase exports of agricultural commodities	Sustainable agriculture as part of a diversified economy
Role of technology in agricultural development	Increase productivity through scientific innovation, adoption of technology, and modern management	Farmers must be competitive through product diversification, agroecology and minimal use of external inputs (fertilizers)
Environmental Stewardship	Protected areas, national parks and environmental regulations	Agriculture and the environment cannot be separated; sustainable agriculture allows conservation

Source: Adapted from Wittman, H. (2011). "Food Sovereignty: A New Rights Framework for Food and Nature?" *Environment and Society: Advances in Research* (2): p. 91.

As mentioned in the introduction, the Bolivian constitution and its national government use food sovereignty to inform the current policy framework to improve agricultural productivity of campesino communities and the rest of the Bolivian territory. The rest of the section looks at the past and current situation in Bolivia and the campesinos in the department of Tarija.

2.3. Food security and food sovereignty in Bolivia

Bolivia is one of the poorest countries in South America and its economic and political instability have led to economic stagnation and high levels of poverty and food insecurity. One of the major changes in the socio-political organization in the last three decades is the migration of thousands of campesinos from rural areas to big cities like El Alto, Cochabamba and Santa Cruz. Data from the Institute of National Statistics (INE in Spanish) show that while in 1977 the urban population represented 41.3%, by 2008 it increased to 65.5% (Ormachea, 2009, p.5). The current situation has had a great impact on the agricultural productivity of the country and on campesino's livelihood. Similar to the rest of Latin America, Bolivia's agricultural policies in previous decades have shifted the production of food to the private sector. While in 1980 campesino production contributed almost 80% of national food production, by 2000 it only represented 36.8% (Ormachea, 2009, p.31). Other important indicators are:

- Decreased levels of agricultural GNP, from 11.2% in 1988 to 9.8% in 2007.
- Stagnation of agricultural productivity, showing a decrease in growth rate levels since 2006.
- Increase in export oriented production and agro-industrial complexes, directing the attention to regions such as Santa Cruz, Pando, and Cochabamba where industrial production of food is concentrated.
- Accumulation and mercantilization of land, where by 2002, campesinos that represented 72% of land beneficiaries only received 19% of the land distributed, while medium and large agribusiness, representing the 15% of beneficiaries, received over 50% of land (EC-AIPE, 2004).

In terms of food security levels, it is important to look at the four dimensions mentioned at the beginning of this section: availability, access, utilization, and vulnerability. According to government data, in terms of food production, more than half of the Bolivian territory presents low levels of agricultural productivity and severe limitations to producing any food. Furthermore, almost 94 municipalities (20% of the national territory) present very severe limitations for agricultural productivity. In total,

72% of the territory or 222 municipalities lack the conditions and potential to improve agricultural development, impeding the adequate availability of food in the country. Almost 79% of wheat, one of the most important products for the Bolivian diet, has to be imported from other countries in order to satisfy national demand (EC-AIPE, 2004, p.12). Moreover, in the last four decades, the availability of foods like milk products, vegetables, legumes and fruits has only increased by 2%, compared to significant increases in the availability of vegetable oil, sugars, and animal fats (Jiménez, 2011, p. 8). This means that Bolivians not only have less food availability, but the food they are consuming is less nutritious.

As mentioned before, food availability is not the only condition necessary for achieving levels of food security; households and individuals should have 'entitlement' and access to food through their own production or income. Unfortunately, data from the United Nations Children's Fund (UNICEF) suggest this is not the case. By 2002, almost 60% of Bolivians lived in poverty and of those, close to 25% lived in conditions of extreme poverty (UNICEF.com, 2011). It is important to mention that poverty levels are worst in rural areas of the country, and that by 2001, the poorest 20% of the population had to spend almost 63% of their income in food expenses and almost one third of the population (3.6 million) was unable to access the basic consumer basket (Jiménez, 2011, p.10).

In terms of utilization or use, Bolivians are not getting adequate quantities of nutritious food. Based on data from the INE, author Enrique Ormachea illustrates that the consumption of food is limited to a small variety of products. The diet of most low income Bolivians is based on wheat, rice, potatoes and meats. Milk products, vegetables and fruit show very low consumption levels. Jiménez (2011) argues that 63% of Bolivian households have access to less than 90% of the recommended energy, calorie and nutritional intake (p.11). Moreover, the lack of education regarding nutrition and easy access to foods high in fats and sugars, have increased the levels of high blood pressure, obesity and diabetes, especially in urban areas.

Finally, in terms of vulnerability, in 2002 the WFP and the Bolivian government conducted a study called *Vulnerability Analysis and Mapping* or VAM, and identified 53% of municipalities in the highest vulnerability levels (VAM 4 y VAM 5). VAM models

analyse some of the conditions that lead to food insecurity levels and compare them at the municipal level. Some of the variables in the analysis of VAM levels include: poverty, access to clean water, basic services, education, health, and risk of natural disasters such as flooding or draught (WFP, 2008).

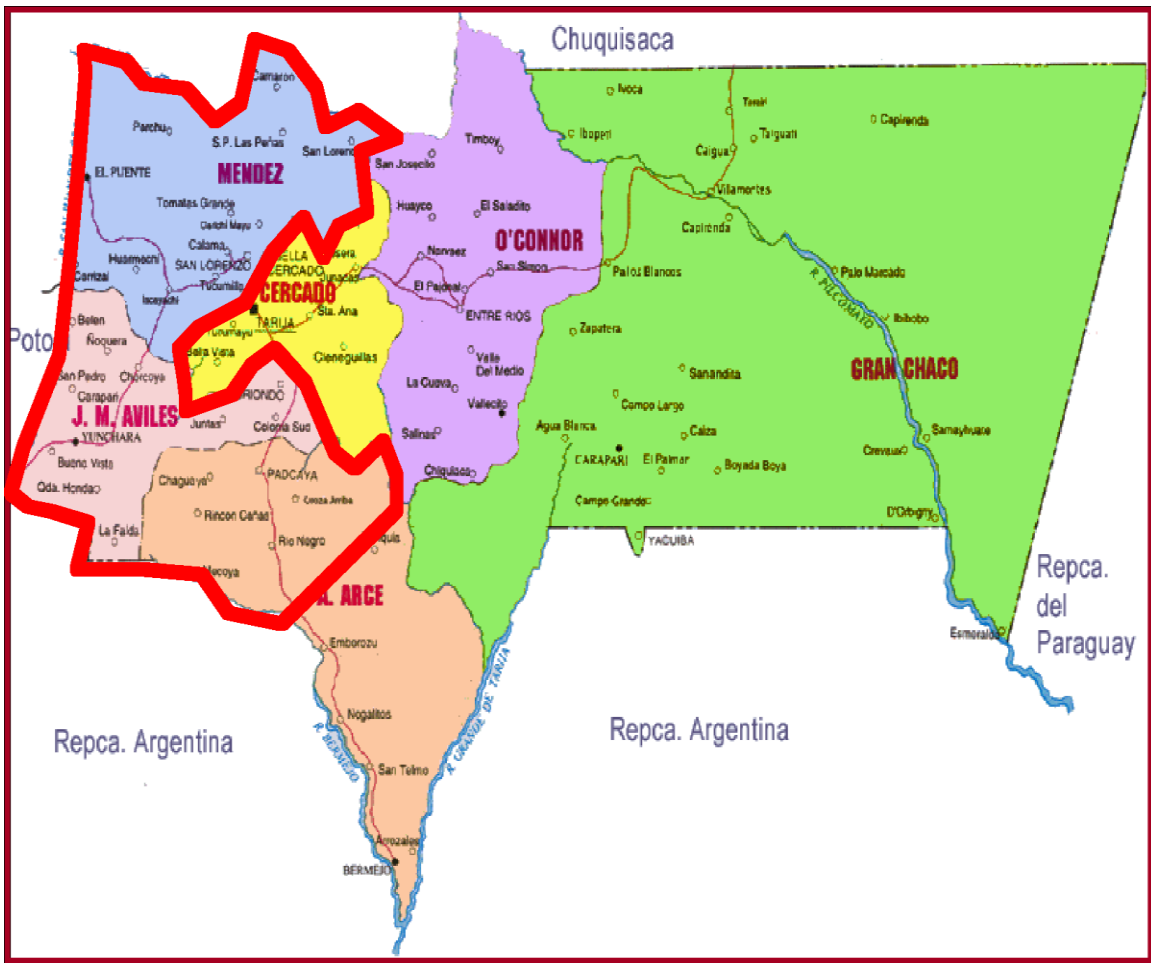
As mentioned before, rural municipalities and campesino communities show some of the highest levels of food insecurity in Bolivia. The neoliberal economic policies in the last decades of the twentieth century supported large agricultural corporations to compete in the export-oriented global market. Unfortunately, small farmers, campesinos and indigenous communities were not able to compete and, in many cases, they were forced to immigrate to the city or other countries and/or to limit their production to subsistence agriculture. The next sections in the research concentrate on the study of four rural municipalities in the Department of Tarija, located in the southeast of Bolivia.

2.4. ‘Mancomunidad Héroes de la Independencia’

The ‘Mancomunidad Héroes de la Independencia’ (*Mancomunidad or Commonwealth*) was created in 1998 as part of a development project between the municipalities of San Lorenzo, Yunchará, El Puente and Uriondo. The main objective for the collaboration of these four municipalities is to improve the agricultural and economic growth of their communities. The limits of the *Mancomunidad* are: the department of Chuquisaca to the north, the province of Cercado and Arce to the south, the department of Potosi and Chuquisaca to the west, and the province of O’Connor, Cercado and Arce to the East. The territory of the *Mancomunidad* has approximately 8,101 Km², and it represents 21.5% of the territory of the department of Tarija.

The territory of the *Mancomunidad* is divided into two very different geographical zones. The municipalities of Yunchará and El Puente are situated in the highlands, while Uriondo and San Lorenzo are in the valley. These characteristics create a variety of climatic and ecological zones such as semi-deserts, valleys, and tropical conditions. In general, the highlands have less agricultural production than the valleys. Figure 1 below shows the geographic location of the *Mancomunidad*.

Figure 1 Map of the Department of Tarija and geographic location of the 'Mancomunidad Héroes de la Independencia'



Source: Adapted from Atlas Bolivia (CIMA). Available online at www.mirabolivia.com/

Table 2 below describes some of the most important characteristics of each municipality using estimates from the INE and the *Mancomunidad's* Territorial Development Plan (TDP).

Table 2 Municipality's Characteristics

	Uriondo	Yunchará	San Lorenzo	El Punte
Population (2000/2011)	25,401	6,673	32,490	10,469
Number of Communities	46	43	79	50
Territory in KM2	719	1822	3454	2106
Density	16,24	2,76	6,08	6,29
Growth rate	1,37	-0,102	1,18	1,26
Labour force	46.2%	44.2%	51.4%	45%
Monthly Average income	73 US	75 US	78 US	77 US
Literacy	76%	65%	67%	67%
Access to clean water	39%	54%	61%	72%
Access to toilets	42%	64%	47%	71,5%
Electricity	49%	17%	51%	45.5%

Source: Instituto Nacional de Estadística (INE) and Territorial Development Plan.

Chronic malnutrition levels in the *Mancomunidad* are elevated, with 13.4% of children showing some signs of undernourishment. Furthermore, an average person in the *Mancomunidad* needs approximately 2,189 calories per day, yet data shows that 82% of families consume less than 2,000 calories per day. The daily recommended food intake shows that there is a gap of almost 31.3%. The nutritional intake of the population is not being met by the basic food basket and this condition may be the main reason for signs of malnutrition in children under two and their mothers, two of the populations most impacted by food insecurity.

In terms of food availability in the *Mancomunidad*, only 38.4% of the basic food basket is produced locally, while the remaining products need to be brought in from other markets. Food produced in the region provides an average of only 1,030 calories per day, per person, which means that it only contributes 47% of the recommended daily intake. Finally, as with other municipalities in Bolivia, most of the consumption is based on carbohydrates with very few portions of legumes, fruits and vegetables. Table 3 shows the type of products that are consumed by municipality.

Table 3 Common Foods per Municipality

San Lorenzo	El Puente	Uriondo	Yunchará
Rice	Rice	Rice	Rice
Beef with bones	Dry peas	Peas	Dry peas
Noodles	Beef with bones	Chicken	Lamb
Wheat flour	Noodles	Beef	Noodles
Eggs	Fava Beans	Noodles	Pulse
Milk	Wheat flour	Fava Beans	Dry Fava Beans
Corn	Eggs	Wheat flour	Wheat flour
Bread	Corn	Eggs	Corn
Potato	Peanuts	Milk	Peanuts
Wheat	Bread	Corn	Bread
	Potatoes	Peanuts	Potatoes
	Quinoa	Bread	Bread
	Wheat	Cheese	Cheese
		Pumpkin	Wheat

Source: Instituto Nacional de Estadística (INE) and Territorial Development Plan.

In terms of access, there is a gap between average income and the amount needed to meet the basic food requirements for most people from the *Mancomunidad*. The average income is \$75 USD per month and the majority of financial resources are spent on food produced elsewhere, as the products they produce in their communities are not sufficient to feed them. A lack of income sources alongside dependency on outside products has increased the current levels of food insecurity in the population. As mentioned before, the diet in the population is based on oils, fats and carbohydrates and the amount of milk products, fruits, and vegetables consumed is insufficient. In many cases, nutritious products such as fava beans and peas are sold in the market in exchange for wheat products like noodles and bread which have very low nutritional values.

Finally, due to the lack of agricultural productivity and the risk to extreme weather conditions (especially drought), all municipalities show high levels of vulnerability. While El Puente, and Yunchará are classified as VAM 4 (Low response capacity and high risk),

Uriondo and San Lorenzo are VAM 3 (Medium response capacity and medium risk). Although there have been positive changes in some economic and social indicators in the past five years, the municipalities in the *Mancomunidad* still show high levels of food insecurity and they have not been able to improve their own food production, which is necessary to achieve food security and food sovereignty.

2.4.1. Campesino communities in the Mancomunidad

This research concentrates on the study of 96 families in seventeen campesino communities in the *Mancomunidad*. The objective of the research is to evaluate current food security levels in the households, understand the policy capacity of the municipalities, and recommend, based on the constitutional framework of food sovereignty, policy alternatives to improve the access, availability, use and vulnerability of food in campesino communities.

Although each campesino community in the sample has its own characteristics, there are few similarities that are important to mention. First of all, most of the communities in this research are located in isolated areas with extremely poor road conditions. This situation impedes the communication between communities and other populated areas. In general, the communities have a communal building that is used for meetings, storage of agricultural products, and in many cases, as the school for the children. This 'town centre' is very important because it is where the socialization and discussion of communal projects takes place. Each household in the community generally has a small individual plot of land; however, it is not uncommon to also share some communal land for the grazing of animals or other agricultural uses. Communities share a very strong connection between households, and as with many other campesino and indigenous groups in Bolivia, most of the decisions that affect the community are adopted through the consensus of all members (CENDA, 2011, p. 89).

3. Methodology

This section explains the methodology used to collect information in this research. The section begins with the discussion of the paradigm and the importance of using both qualitative and quantitative methods of analysis. Next, the section provides a description of each of the three methods used and the resulting data. Finally, the research discusses some of the challenges and issues of the information collected in the study.

3.1. Paradigm

A paradigm, according to David Morgan (1996) is “a system of beliefs and practices that influence how researchers select both the questions they study and methods that they use to study them” (p. 49). In the case of food security, this includes conventional approaches concentrated on objective and quantitative measures such as supply and demand of food, daily calorie intakes and target levels of consumption. However, as mentioned in the introduction and following a general paradigm shift in the study of social sciences, since the 1980’s researchers have renewed their attention to qualitative research. This study takes into account that both quantitative and qualitative methods are important for the research of food security and the issues surrounding it. The strength of quantitative methods is the generalization, objectivity and deduction of the problem from the data collected. While qualitative methods, on the other hand, concentrate on the specific context, the induction and the subjectivity of the problem.

3.2. Research Methods

From June 1st to August 24th, 2011 the investigator was based in Tarija-Bolivia to do field research. The three main research methods are described below.

3.2.1. Quantitative household survey

The second methodology this research uses is a survey of 96 campesino households that have been working with the IICCA (Instituto de Investigación y Capacitación Campesina in Spanish), a non-governmental organization (NGO) that provides educational and technical support to campesinos in the *Mancomunidad*. The survey collection took place on August 4th and 5th of 2011 and included campesino households in the municipalities of San Lorenzo, El Puente, Uriondo and Yunchará.

The survey gathers quantitative information about the food security/food insecurity situation of the family. The first three sections of the survey collect quantitative variables aimed to understand the current economic situation of the household. The variables are grouped under: a) living conditions, basic services and education, b) household income sources (salaries, sales, subsidies and loans); and c) agricultural production and agroecological techniques. A fourth section uses a set of nine to fifteen questions called the 'Food Security Assessment Scale' (FSAS). This survey was developed and implemented by the United States Development Agency (USDA) in the 1980's and has been used in both developed and developing countries to assess the food security levels at the household level (Moncada & Ortega, 2006).

The FSAS used in this research is an adaptation from the USDA survey developed by the Brazilian Institute of Statistics and Geography (IBGE in Portuguese) which reflects the differences in the Latin American context. The FSAS asks nine questions to families without children under 12, and six extra questions for families with children. Each of the questions refers to the conditions, experiences and behaviour of the household in the last year in regards to access and consumption of food. If the respondent answers yes to one of the question, a score of 1 is given, and if the respondent answers no, then no score is assigned. Based on the totals, each household is assigned a level of food security based on the following scale:

Table 4 Household Food security Scale and Categories

Category	Household score with children under 12	Household score without children under 12
Food Secure	0 points	0 points
Low food insecure	1 to 5 points	1 to 3 points
Moderate food insecure	6 to 10 points	4 to 6 points
Severe food insecure	11 to 15 points	7 to 9 points

Source: Moncada, G., and Ortega, J. (2006). *Medición de la inseguridad alimentaria en encuestas de hogares: Un método cualitativo factible de aplicar en América Latina y el Caribe*. Food and Agriculture Organization and European Union.

The definition of each classification is:

Food Secure: Households do not show any evidence of food insecurity.

Low Food Insecure: Food insecurity is shown through the family's concern about food availability in the household.

Moderate Food Insecure: Food consumption in adults has been reduced and they have experienced hunger due to the food restrictions.

Severe Food Insecure: Households with children in which consumption of food has been reduced to a point where children experience hunger, while adults show evidence of severe hunger (for example, entire days without food).

The survey allows the research to understand the variables that affect the access, availability, vulnerability and use of food in the communities. Moreover, the FSAS questions provide a good assessment of the current levels of food insecurity in the study's household sample.

3.2.2. Qualitative document content analysis

The first method includes the analysis of the most important policy documents at the national and at the local level. The objective was to identify the legal framework for the creation and implementation of food security and food sovereignty policies in rural communities such as the *Mancomunidad*. With this goal in mind, the research analyzes

some of the main documents that constitute the constitutional, legal, and political framework of both the national and municipal governments.

The first document this research analyzes is the new Constitution of the Plurinational State of Bolivia adopted in February 2009, because it sets the economic, political and social direction of the state. The document makes specific reference to food security and food sovereignty in nine different articles that identify the competencies, as well as the rights for each level of government (national, departmental, municipal and communal). The analysis section provides a short summary of the constitutional mandate and its implication for policy creation. A detail of the articles that refer to food security and food sovereignty can be found in the Appendix section.

Next, the study examines two recent national laws passed by the current national government to improve the agricultural production and support of the rural economies in the Bolivian state. These laws are the response to the current food security and food sovereignty problem in the country and, like the constitution, form part of the legal framework in which policy is created at all government levels.

Finally, the investigation explores two political documents at the national and local level. The first one, the National Development Plan (NDP) is a document created by the President Evo Morales outlining the strategic direction of his government policies at the economic, political, social, and cultural levels. The research concentrates on the areas in which the document makes specific reference to the food sovereignty framework, strategies and policies. The second document is the Territorial Development Plan (TDP) of the 'Mancomunidad Héroes de la Independencia'. This document describes the objectives and goals in terms of social and economic development for the commonwealth. Although the text includes many issues such as tourism and natural resources, the study only analyses the strategies and policies that make reference to the development of policies that improve food security and food sovereignty in the *Mancomunidad*.

3.2.3. Qualitative semi-structured interviews

The interviews took place from the 4th to the 24th of August 2011 in the municipalities of Tarija and La Paz. There are twelve semi-structured interviews with

three different groups of stakeholders. The objective of the semi-structured interviews is to provide primary data on the knowledge, application, capacity and perception of food security and food sovereignty policies, programs and initiatives in the *Mancomunidad*. Each of the participants knew the objective of the research and they provided their written consent to record the interview. All interviews and transcripts are in Spanish; however, all important quotes used in the analysis section were translated into English. The interview schedule can be found in the Appendix section at the end of the research.

The first group of interviews (five in total) consist of campesino leaders of the *Mancomunidad* recruited on a voluntary basis through different field trips to their communities. The semi-structured interviews allow the exploration of current food security and food sovereignty programs and initiatives in campesino communities. This group of interviewees is crucial to the research because they are the ones most affected by any policy or program implementation aimed to improve the food security levels in rural communities.

The second group of interviews (four in total) includes the mayors of Yunchará and Uriondo as well as two of the agronomists responsible for the agricultural development of both municipalities. The interviews with the mayors were set up with help of the director of the IICCA, Mr. Jaime Gumiel, who works closely with them in many development projects. The interviews with the agronomists were set up on the recommendation of the mayors who provided their names and facilitated the contact. Although the initial idea was to interview the mayors of all four municipalities that form the *Mancomunidad*, due to time constrains only these two interviews were possible. The interview questions are also semi-structured; however, the topics in the interview schedule are more defined than the ones with campesino leaders. The interviews analyse the policy knowledge, application, capacity and perception that these public servants had in relation to food security and food sovereignty.

The third group of interviews (three in total) includes staff members of three NGOs that work with rural and campesino communities in development projects that improve food security levels. Two of these NGOs, Caritas and ASOCIO, are located in Tarija, while the third one, AIPE, is situated in La Paz. Interviews with NGO staff members are important because they work very closely with campesino communities in

specific food security and food sovereignty projects. In many cases, due to the lack of municipal resources, the creation and implementation of agricultural projects in rural communities are implemented by these organizations. In a country like Bolivia, where the state and municipal apparatus cannot reach all households, NGOs have the technical and monetary capacity that allows them to assist those families in need. The staff members in these three NGOs are important informants on the current situation and needs of campesino communities in the *Mancomunidad*. Table 5 summarizes the methodology, method, and objective for each research sources of information.

Table 5 Methodology, Methods and Objectives of the Research

Methodology	Method	Description	Objective
Quantitative	Survey	Economic and demographic characteristics Food Security Assessment Survey (FSAS)	Analyze the economic conditions of selected households and the current food security levels in the <i>Mancomunidad</i>
Qualitative	Document Analysis	Constitution, laws, development plans	Identify the constitutional, legal and policy framework in Bolivia
Qualitative	Interviews	Campesino leaders, mayors, agronomist and NGO staff members	Asses the knowledge, application, capacity and perception of food security and food sovereignty policies, programs and initiatives in the <i>Mancomunidad</i>

3.3. Methodological challenges and issues

The first difficulty was the selection of the documents and laws to analyse. Although the research investigates a range of constitutional, legal and political documents, there were many other documents that could have been included the study (such as municipal budget allocation documents and other national laws). Also, during the survey data collection, due to time constrains, surveyors were not properly trained and a pilot survey was not conducted. In many cases the surveyors found that some questions were very hard to answer, jeopardizing the validity of some information. For example, it was especially difficult for campesinos to answer questions about their exact income and agricultural production. Finally, as mentioned before, the public servants of San Lorenzo and El Puente are not included in this study as it was very difficult to contact them.

4. Analysis

This section summarizes the results and important findings of the different research methods used in the investigation. The first part describes the legal and political policy framework at the national and municipal level. The second part outlines some of the campesino household demographic, economic, and agricultural characteristics as well as the food security levels in the community. The last part presents the findings from the semi-structured interviews conducted with the three participant groups: campesino leaders, municipal authorities and NGO representatives.

4.1. Campesino Household Survey

The main objective of the survey conducted with campesino households is to identify some of the social and economic characteristics of rural families living in the *Mancomunidad*. The survey is divided in four different groups of information: demographic characteristics, family income, agricultural productivity, and food security levels.

4.1.1. Household demographic characteristics

The first questions of the survey gather information about composition of the household in terms of family members, their age range, the number of females and the highest level of education achieved. Survey results show that the average number of people living in rural households in the *Mancomunidad* is five, except for San Lorenzo where the average is six. In all the municipalities there is an average of two children per family and one person older than sixty. The average number of females in each household is three, with the exception of Uriondo where the average is two. Within the sample, the highest level of education achieved by most household heads (75%) was primary school. Finally, the percentage of children that attend school differs in each

municipality; however the average for the *Mancomunidad* is very low with 41% compared to other municipalities in Bolivia.

The survey also analyses the characteristics of the dwelling, including access to basic services such as toilets, water, phone, electricity, sewage and natural gas. First, the average number of rooms per household is four in all municipalities. Also, on average, 72% of families in the *Mancomunidad* have access to a toilet; however it is important to note the difference between the municipalities; while 96% of households in Yunchará have access to one, only 56% and 57% of families at El Puente and Uriondo said they have access to a toilet. Less than 5% of households have access to a phone line, and in San Lorenzo no family reported having one.

None of the households in the four municipalities has access to sewage or natural gas, apart from 7% of families in Yunchará that have access to a gas connection. The percentage of households with access to electricity ranges between 78% and 72%. Finally, the percentage of households with access to water varies in each municipality; Yunchará has the highest percentage with 89%, followed by Uriondo with 78%, San Lorenzo with 44% and finally El Puente with 33%. Table 6 below summarizes the information.

Table 6 Household Demographic Characteristics

	Yunchará	El Puente	Uriondo	San Lorenzo	Mancomunidad
People living in the house	5	5	5	6	5
Minors < 12	2	2	2	2	2
Seniors > 60	2	1	1	1	1
Women	3	3	2	3	3
Head of household highest level of education	Primary School (81%)	Primary School (71%)	Primary School (81%)	Primary School (67%)	Primary School (75%)
Children in School	37%	43%	56%	28%	41%
Number of Rooms	4	4	4	4	4
Access to toilet	96%	57%	56%	78%	72%
Access to water	89%	33%	78%	44%	65%
Access to phone	4%	5%	4%	0%	3%
Access to Electricity	78%	76%	78%	72%	76%
Access to sewage	0%	0%	0%	0%	0%
Access to gas	7%	0%	0%	0%	2%

4.1.2. Household income

This section of the survey summarizes household's earnings from different sources such as: monthly and temporal² income, annual revenues from agriculture, government subsidies and loans. The percentage of households that have a monthly income is: 15% in Yunchará, 14% in El Puente, 11% in Uriondo, and 33% in San

² Earnings they receive during specific months when a family member immigrates to work in urban centers in Bolivia or into farms in Argentina during harvest.

Lorenzo. The average monthly income differs in each of the municipalities. Yunchará's average monthly income is the highest at approximately 186 USD³, Uriondo is the second highest with an average of 73 USD and the lowest are San Lorenzo and El Puente with 48 and 47 USD respectively. These monthly revenues represent the income per family, not per capita.

The percentage of families with a temporal income in the *Mancomunidad* is 28%, however; Yunchará has the highest percentage (48%), El Puente the lowest (10%) and Uriondo and San Lorenzo in between with 26 and 28% respectively. On average the revenues from this income source were 61 USD for the four municipalities. The third source of income for campesino families in the *Mancomunidad* comes from the agricultural products they sell to the cities. The annual revenue they receive from this source is different between the municipalities in the highlands (Yunchará and El Puente) and the ones located in the valleys (Uriondo and San Lorenzo). Campesino households in the former municipalities have average annual revenue of 260 USD, while the latter ones had an average of 590 USD. This disparity can be primarily explained by the difference in climate and accessibility to water in both areas.

In addition to these sources, the majority of campesino households benefit from government conditional money transfers targeting three vulnerable groups: school age children, pregnant women, and seniors. The subsidy "Juancito Pinto" consists of a 29 USD subsidy per school year for low income children in the first eight school grades. The survey shows that 67% of households in the *Mancomunidad* benefit from this grant. The second subsidy "Juana Azurduy" gives six installments of 18 USD per year to pregnant women, until their children are two years old. Only households in three municipalities receive this funding, 15% in Yunchará, 19% in El Puente and 7% in Uriondo. The last

³ One USD (US Dollars) is approximately 6.87 Bolivianos as of February 2012.

subsidy is called “Renta Dignidad” which is 29 USD per month given to low income seniors sixty years or older. Households in El Puente and San Lorenzo had the highest percentages among all the municipalities with 38% and 39% respectively, while only 19% of households received this funding in Uriondo and 11% in Yunchará.

Almost 100% of households in the *Mancomunidad* benefit from a departmental grant called PROSOL, which helps campesino communities with agricultural production and related expenses. The departmental government gives around 290 USD per year to each community. Finally, the survey results show that 32% of households in the *Mancomunidad* have a loan (15% in Yunchará, 14% in El Puente, 37% in Uriondo and 61% in San Lorenzo). The amount of the loans varies from 100 USD to 230 USD.

Table 7 summarizes the household’s income sources in each municipality.

Table 7 Household Income Sources (in USD)

	Yunchará	El Puente	Uriondo	San Lorenzo	Mancomunidad
Monthly income	15% (186 USD)	14% (47 USD)	11% (73 USD)	33% (48 USD)	18% (89 USD)
Temporal work income	48% (53 USD)	10% (62 USD)	26% (74 USD)	28% (55 USD)	28% (61 USD)
Annual Agricultural income	230 USD	289 USD	567 USD	612 USD	424 USD
Government Subsidies					
- “Juancito Pinto”	78%	67%	63%	61%	67%
- “Juana Azurduy”	15%	19%	7%	0%	10%
- “Renta Dignidad”	11%	38%	19%	39%	27%
- PROSOL	100%	100%	96%	100%	99%
Households with loans (In past 3 years)	15%	14%	37%	61%	32%
Average loan amount	104 USD	102 USD	229 USD	140 USD	144 USD

4.1.3. Agricultural productivity

This section summarizes the information about the number of agricultural products that campesinos produce on their land and their destination. This section also

reveals the knowledge and practices of agroecological techniques campesinos use to produce their yields.

4.1.3.1. Agricultural products

Although some products and agricultural practices vary a little in each municipality, the majority of campesino households (71%) in the *Mancomunidad* have between three and five different types of crops. The two most frequent agricultural products are potatoes (96%) and maize (74%). Both of these products are used mainly for household consumption, where 90% of maize and 71% of potatoes are consumed by the family, and only 3% and 17%, respectively, are sold in the city market. Other common crops produced by the communities are onions (41%), fava beans (40%, except in Uriondo) and peas (40%, except in Yunchará) and almost three quarters of these products harvest are consumed by the family (around 60%), and the surplus is sold in the city. Some campesino households from San Lorenzo, El Puente and Uriondo also cultivate tomatoes (16%) and other vegetables (12%). Half of the tomatoes are consumed and the other half sold, while the majority of the production of other vegetables is consumed by the family (82%). Table 8 shows the most common agricultural products in the *Mancomunidad* and their destination.

Table 8 Most Frequent Agricultural Products

Product	% of households	Household consumption	For sale
Potatoes	96%	71%	17%
Maize	74%	90%	3%
Onions	41%	64%	35%
Fava beans	40%	67%*	16%*
Peas	40%	57%**	32%**
Tomatoes	16%	46%**	53%**
Vegetables	12%	82%**	18%

* Except Uriondo

** Except Yunchará

4.1.3.2. Agroecological practices

Some agroecological practices are common among campesino communities in the *Mancomunidad*. The four most utilised techniques and their frequency are: 1) use of organic fertilizers (91%), 2) crop rotation (87%), 3) crop association (59%), and 4) crop contour lines (57%). It is important to mention that among all municipalities, San Lorenzo's campesino communities are more likely to use these techniques as well as the use of organic pesticides (72%). Moreover, only 22% of campesinos in Yunchará do not commonly practice crop association, and in Uriondo only 23% use organic fertilizers. Finally, the use of localized irrigation (by sprinkler or drip) is very low in all of the communities (24%); Yunchará is the lowest (4%), followed by El Puente (24%), San Lorenzo (33%) and finally Uriondo (37%).

The survey shows that very few campesinos in the *Mancomunidad* have received training regarding agroecological practices such as: use of water, maintenance of the soil, other agriculture and livestock ecological techniques, climate change adaptation, and finally commercialization of their products. Only 40% of campesinos are familiar or have attended a session on soil and other agroecological practices. Furthermore, only 25% have training on the use of water and improvement of livestock. And finally, only 6% or less know about ecological fish farming, climate change adaptation and commercialization of their products. Table 9 shows the percentages of households that use agroecological practices or have received any training on this subject.

Table 9 Agroecological Technique Practices and Training

PRACTICES	%
Use of organic fertilizers	91%
Crop rotation	87%
Crop association	59%
Crop contour lines	57%
Organic pesticides	49%
Localized irrigation	24%
Training	
Soil	40%
Agriculture	40%
Water	25%
Livestock	25%
Fish farming	6%
Climate change	6%
Commercialization	5%

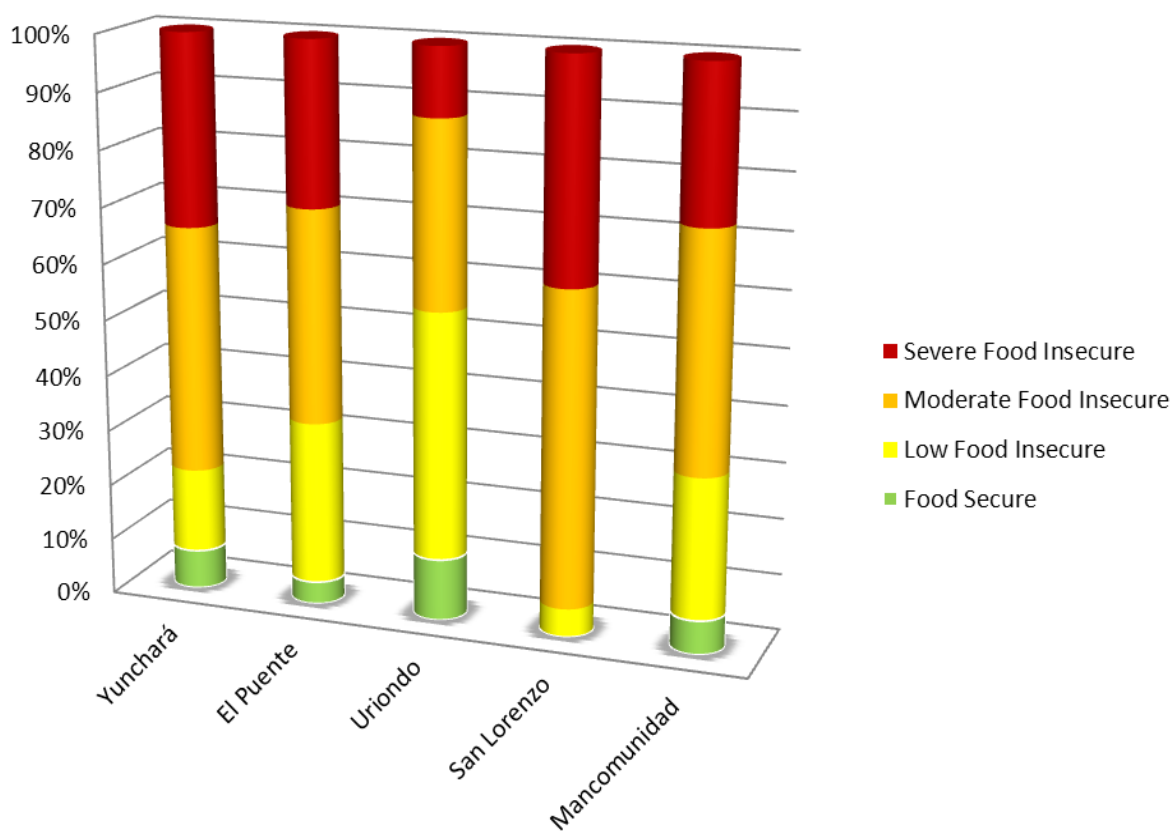
4.1.4. Food security levels

As mentioned in the methodology section, the survey also includes the analysis of food security levels using the “Food Security Assessment Scale” (FSAS). Results show that the majority of campesino households in the *Mancomunidad* face moderate and severe levels of food insecurity. From all municipalities, San Lorenzo has the highest levels of food insecurity, with 56% of families with moderate food insecurity and 39% with severe insecurity. In addition, San Lorenzo is the only municipality with no families in the food secure category. The second most vulnerable municipality is Yunchará, where 78% of families are categorized as moderate and severe food insecure (44% and 34% respectively). Only 7% of families report being food secure. In El Puente, more than half of the sample shows some level of food insecurity (38% moderate and 29% severe). Finally, Uriondo shows the lowest levels of food insecurity in the survey. Only 11% of families are severe food insecure and 33% moderate food insecure. Uriondo also has the highest percentage of households (11%) considered food secure. Table 10 and figure 2 below summarize the results for each of the municipalities and the average of the *Mancomunidad*.

Table 10 Household Food Security Levels

Municipality	Food Secure	Low Food Insecure	Moderate Food Insecure	Severe Food Insecure
Yunchará	7%	15%	44%	34%
El Puente	4%	29%	38%	29%
Uriondo	11%	44%	33%	12%
San Lorenzo	0%	5%	56%	39%
Mancomunidad	6%	25%	42%	27%

Figure 2 Food Security Levels



4.2. Document analysis

The following section identifies the constitutional, legal, and political framework for the application and creation of public policies aimed at improving Bolivia's food security and food sovereignty conditions. Below is a short description of the most important articles in the Bolivian Constitution, recent laws and development plans that constitute the normative framework for both national and municipal policies.

4.2.1. Constitution

In February 2009 the Plurinational State of Bolivia adopted a new constitution aimed to restructure the economic and social organization of the state. There are nine articles in the constitution that make specific reference to food security or food sovereignty and the role of the state. According to this document, the government (national, departmental and municipal level) has the responsibility to guarantee food security of the nation, by supporting the local production of food in campesino communities. The constitution specifies that the right to food is protected from any external influence (international markets), and agricultural production use agroecological practices. Furthermore, the constitution states that use of natural resources such as water and land, should respect the framework of food sovereignty through the implementation of sustainable agricultural techniques, as well as the respect for each community to decide on their own food production. Lastly, the state should promote rural sustainable development, once again, respecting the food security and sovereignty, while prioritizing the production and consumption of foods cultivated in the Bolivian territory. A more detailed description of each article can be found in the appendix section.

4.2.2. Laws and other regulations

This section summarizes two Bolivian laws that constitute the legal framework for the creation and implementation of public policies related to food security and food sovereignty. The two laws summarized below are quite recent (2006 and 2011) and have been created using the food security and food sovereignty constitutional framework described in the previous section. These laws are important because they constitute the

normative framework for the sustainable development of the rural sector, especially campesino communities in poor regions of the country with high levels of food insecurity.

4.2.2.1. Law 3525 (21 of November 2006)

The law's main objective is to "regulate, promote and strengthen the sustainable development of the agricultural ecological production in Bolivia". The law is based on the principle of fighting against hunger by producing high quality, healthy and ecological products, and making them accessible to everyone. Article 3 of the law defines what an ecological product is and outlines the conditions that it must have to be classified as such. Moreover, article 6 makes specific reference to how this law forms part of the national strategy to achieve food security and food sovereignty through the development of the rural sector. Chapters 3 to 6 outline the creation of the National Council of Ecological Production (CNAPE in Spanish) and the institutional framework for the development of a system of certification for a national "ecological product stamp". Finally, chapter 7 describes some of the incentives and promotion of the law among departments, municipalities and indigenous communities.

4.2.2.2. Law 144 (26 of June 2011)

This law, also called the "Law for the community agricultural production revolution" was recently adopted (26 of June, 2011) by the Bolivian government and its objective is to regulate the process for the community agricultural production, by establishing the institutional bases, policies, and mechanisms for the production, transformation and commercialization of agricultural and forestry products. Moreover, according to Chapter 1, Article 2, the law will prioritize the production of ecological products to respect the "harmony and equilibrium [...] of mother earth".

Law 144 is divided into three parts: general provisions, public policy structure, and financing. The first part contains three chapters and eleven articles (1 to 11) which outline the constitutional and legal framework, state the most important terms, and state the principles as well as the reach of the law. The second part comprises four chapters and 35 articles (12 to 46) in which specific policy directions are described, such as: strengthening the participation of small campesino communities, protecting the environment, and improving the consumption and commercialization of campesino

products. Furthermore, Chapter Two of this part establishes the creation of the Universal Agricultural Insurance “Pachamama”⁴, an insurance program aiming to protect campesino communities from natural disasters. The last two chapters in this part (3 and 4) describe the institutional structure and the role of the State in the planning, implementation and evaluation of the outcomes of the law. Finally, the last section of the law contains two chapters and ten articles (47 to 57) that explain the financing sources that will allow the implementation of each provision.

4.2.3. National and local development plans

The last two documents analysed in this section are the National Development Plan (NDP) proclaimed by the Bolivian President Evo Morales in June 2006, and the *Mancomunidad* Territorial Development Plan (TDP) for the years between 2009 and 2014. Both documents contain important information about the vision, policies, and objectives at the national and local level. The analysis of both documents takes into consideration how the concepts of food security and food sovereignty play a role in the political, economic and social development both at the national and local level.

4.2.3.1. National Development Plan (NDP)

The NDP’s motto is to create a country that is “decent, sovereign, productive and democratic”. It was presented on June 16th, 2006 and approved through the Supreme Decree # 29272 on September 12th, 2007. This document outlines the strategic guidelines to co-ordinate the political, institutional, and territorial processes of the Bolivian government. The NDP outlines four major directions: a) development with social inclusion (Bolivia Digna), b) decentralization and social community power (Bolivia

⁴ Pachamama means “Mother Earth” in Quechua.

Democrática), c) improvement of the productive, industrial and export sectors (Bolivia Productiva), and d) change in the direction of international relations (Bolivia Soberana).

The first part of the document outlines the development strategies and the policy framework. It states that one of the main pillars guiding the national strategy on productive development is the concept of food sovereignty. According to the NDP, the State should define its own policies and strategies of production, consumption and import of basic foods, preserving and protecting its own diversity and cultural traditions. This vision seeks to achieve the nation's food security and sustainability goals through the support of new and traditional agricultural techniques, prioritizing the development of small and medium farmers as well as other community productive organizations. The NDP states the government's responsibility to guarantee access to water, soil, genetic resources and fair markets to rural municipalities and campesino communities.

Although food security and food sovereignty are mentioned in many sections of the NDP, the most relevant mention is in Chapter 4, subsection 3 called "Public policies for food security and food sovereignty". This section of the document describes how the State should promote and lead the development of policies that will increase the demand and supply of national products that have been produced using agroecological practices. This strategy aims to privilege the consumption of national products over foreign exports, and promote self-sufficiency with healthy, nutritious and accessible traditional food. Finally, this policy allows the government to invest in research to improve the agriculture sector as well as Bolivian eating patterns through education, information, communication and campesino training.

4.2.3.2. *Mancomunidad* Territorial Development Plan (TDP)

The TDP's 2009-2014 main objectives are to collect important economic and social information about the *Mancomunidad* and formulate different policy directions to improve the economic development of the four municipalities. This document is the result of more than ten years of political and economic work, and it has become an important instrument for planning and coordinating policies that help improve the living conditions of both urban and campesino households in the *Mancomunidad*. Although the document highlights the importance of the agricultural sector, the policies and recommendations outlined in the document do not make specific reference to the

concepts of food security and food sovereignty. The only mention to these concepts can be found in the vision of the *Mancomunidad*, where the TDP states that the *Mancomunidad* “has a dream... to see the communities with better life quality, food security and food sovereignty, connected through a network of roads in good condition and with quality basic services.”

4.3. Semi- Structured Interviews

This section compiles the information found in the analysis of the semi-structured interviews. The section is divided into three interview groups: campesino leaders, municipal authorities (mayors and agronomists), and NGO representatives. The participants’ answers to the questions are classified into four themes: food security and food sovereignty definition, policy capacity, policy implementation, and other policy perceptions (such as what level of government –national, municipal, communal - do they think is responsible for policy development and implementation).

4.3.1. Campesino leaders

The term campesino leader refers to members of a community that represent the interests of their groups in larger communal organizations, such as syndicates and councils. Campesinos leaders are an integral group in the creation and implementation of food security and food sovereignty policies and projects. They are the main connection between the community and the rest of social and political organizations in the municipality. The next part summarizes the analysis of the interviews with five campesino leaders from three campesino communities: Carlos Perez from Pueblo Nuevo, Simón Aramayo from Carolina, and Santos Choque, Serafina Ramos and Santusa Gutierrez from El Molino).

The participants mostly identify food security with the health and nutrition of their children. Carlos Perez mentioned, “food security is to have healthy and strong children”. This sentiment was echoed by Simón Aramayo who said, “food security is the protection of children’s nutrition...”. On the other hand, Santos Choque, from El Molino, mentioned that food security was about better access to legumes and vegetables. For him, food

security was having greenhouses where they are able to produce more agricultural products. No one from this group of interviewees had heard of the concept of food sovereignty. However, Arramayo mentioned that the term must be related to the sovereignty of the Bolivian State and the protection of its people.

The second theme that the interviewees addressed was the capacity of their communities and organizations to work on programs and policies meant to improve food security levels. Policy capacity relates to whether or not their communities have sufficient information about food security levels. If so, do they have organizational capability to implement projects by themselves? The answer to this question was similar across all participants: they do not have any information about the current condition of their communities and depend on the municipality and other NGOs to have these figures. Discussing this information, Carlos Perez stated that “it’s collected by the municipal authorities”. Simón Aramayo added that in general, the communities “have to look for projects through NGOs and other nations to improve their levels of food security”. They mentioned that their organizations or communities do not have anyone working directly in food security or food sovereignty projects, but Carlos Perez stated that in the past three years they have increased their participation on this topic through the municipalities Annual Operative Plans⁵ (POAs for their name in Spanish).

Campesino leaders identified some programs and projects that are currently implemented as part of the strategy to improve agricultural production and food security levels. Carlos Perez mentioned that at the moment some of the support comes from the

⁵ The Annual Operative Plans are documents that contain the yearly budget expenses for each of the municipalities. These documents should include the input of all campesino communities, who decide on how to best allocate the resources.

national government through the 'Centro Pan'⁶ as well as some resources given by the municipality to purchase some food. Furthermore, their communities are currently working with NGOs like the IICCA on projects such as greenhouses in schools, and distribution of fava beans and potato seeds. In addition, they have also participated in leadership workshops organized by the municipality and other NGOs. However, the most common comment among these leaders was the belief that more needs to be done. Simon Aramayo, for example, mentioned that the help received from the municipalities is "only a miserable amount". Ramos, Choque and Gutierrez said that they need support with more projects because the current situation is unsustainable. Perez agreed and added that they are in need of "more money and more projects".

Campesino leaders believe that the responsibility to implement these types of projects rests between the national government, the municipality, NGOs and their communities. They believed that the municipalities should coordinate the projects planned by the President and that NGOs should contribute with the resources they get from other nations. A significant comment from campesinos is that the President, Evo Morales, is directly responsible for increasing the funding and the number of projects in the communities, not the municipal government. Furthermore, Santos Choque added that the community should always be included in the planning and execution of the process because "[they] have the right to control the successful implementation of the projects".

Finally, one of the most important challenges to food security identified is the impact of extreme weather conditions (freezing during the winter and droughts during the summer). Santusa Gutierrez emphasized that her community suffers from natural disasters "all year, every season we have droughts, hails, and freezing temperatures".

⁶ This program provides some food and medicines for children under six years old.

These conditions have worsened in the last years and, according to Simon Aramayo, if they were better prepared for climate changes “[they] could produce their own food and provide enough nourishment” for their communities. He believes that it is really important to receive some training and education for them to “know more about food security, and be able to think in the future of our children and our grandchildren”.

4.3.2. *Mayors and Agronomists*

The interviewees in this group are the mayor of Yunchará (Gladys Alarcon), and Uriondo (Alvaro Ruiz) and the agronomists in charge of the agricultural planning in the municipality, Rodrigo Sanchez and Olver Cabello. These interviews are important because they provide information about the policy knowledge and capacity of the local government, and assist in developing an understanding of some of the policy opportunities and challenges of each municipality.

The definition that each participant had regarding the concept of food security was very different; however, they all agreed that the production of nutritious food is very important for the development of human beings. Both mayors agreed that their municipalities should improve the agricultural production of the communities with irrigation projects, access to productive land, and what Uriondo’s mayor called “the expansion of the agricultural frontier”. In regards to the concept of food sovereignty, they see it as the capacity to produce and consume local products, without depending on food imports from other countries. Rodrigo Sanchez, agronomist of Uriondo, added that unfortunately “people don’t know how to eat, they don’t eat locally... and they prefer to buy things that come from overseas”, therefore local producers are discouraged to produce. He thinks that it is important to consume local nutritious food to achieve both food security and food sovereignty.

In terms of policy capacity, both municipalities have a group of agronomist in charge of agricultural projects in the community (four in Uriondo and two in Yunchará). According to the mayors around 25% to 30% of the municipalities' budget is used in projects to improve agricultural productivity. The exact sum depends on the amount of money they receive from the government through the 'Hydrocarbon Direct Tax' (or IDH for its name in Spanish)⁷. According to Gladys Alarcon, mayor of Yunchará, this year it was approximately 2 million Bolivianos (or 289,000 USD). However, this amount is augmented by projects with other public and non-governmental institutions. Both agronomists added that although they do not have the capacity to implement projects in all communities, there are other actors working with those communities not directly reached by the municipality. Even though both municipalities (Uriondo and Yunchará) lack the capacity to evaluate the level of food security in their communities, they agreed that NGOs and the government have provided useful information.

The current projects to improve agricultural production in both municipalities focus mainly on: access to water through appropriate irrigation systems, distribution of seeds, and construction of green houses for vegetable production. Even if Yunchará and Uriondo have different climates, both municipalities lack appropriate access to water in many of their communities. For this reason, both agronomists mentioned that they are currently working with communities on modern and sustainable irrigation systems. In addition to these projects, both mayors mentioned that they are also working with communities to encourage them to create producer associations and increase their participation in the market and control over their products. Alarcon added that it is "very

⁷ The IDH is a per capita percentage of the revenue from the gas and oil industries that the national government transfers to all departments and municipalities. Yunchará, the smallest municipality received around 8 million bolivianos (900,000 USD) in 2011. This amount varies according to the revenues from oil and gas.

important for producers to be able to charge the right prices”; otherwise they are discouraged and stop producing.

It is important to mention that both municipalities have School Feeding Programs (SFPs) in place which provide breakfast and a small snack to school aged children. The municipality of Yunchará is very involved in the administration and implementation of the program. According to the mayor, they have been able to improve the nutritious value of the breakfast by using local products, such as llama meat and fava bean milk. They are also building green houses in some schools, where the children and their parents can produce vegetables and legumes. This initiative also includes teaching the communities about the importance of food security and food sovereignty. Unfortunately, Uriondo’s SFP does not have the same level of involvement from the municipality. Alvaro Ruiz mentioned that “parents and teachers administered the program” and that unfortunately they prefer to buy cheap products from other regions than food produced locally.

In regards to the actors responsible for implementing food security and food sovereignty projects, the participants agreed that the national government should provide both the legal/constitutional framework and equal distribution of resources. Olver Cabello, agronomist from Yunchará, said “while the national government establishes the norms and provides the resources, implementation should be done through each municipality”. Gladys Alarcon also mentioned that it is very important for the communities to get involved in the decision of projects that affect their productivity. According to her, people should start “prioritizing on productivity projects”. However, both Alarcon and Cabello, mentioned that many communities prefer to ask for infrastructure projects like “basketball courts or fences” as opposed to initiatives that increase agricultural productivity. In addition to the local and national governments, the respondents also mentioned the importance of NGO’s in the creation and implementation of projects. Alvaro Ruiz said that these institutions are a great resource for the municipality, as they are able to work with communities that the municipality cannot reach. However, the mayor from Yunchará was more critical and mentioned that although NGOs are necessary, they have created a relationship of dependency with some communities. She added that this relationship needs to change and NGOs should give priority to sustainable projects, administered by the community.

Finally, similarly to the comments from campesino leaders, the mayors and agronomists of both municipalities mentioned that the biggest challenge faced by communities is extreme weather conditions and other natural disasters. Alvaro Ruiz commented that the 2010 floods in the region forced the municipality to spend seventeen million Bolivianos (2.4 million USD) from their Risk Transfers Fund (RTF). Unfortunately, it was all the money in the fund and the municipality eliminated the RTF from the 2012 budget. Rodrigo Sanchez added that this vulnerability has pushed people to leave their lands and migrate to the city and other countries. Although the situation has worsened in the last few years, they believe that they also have many opportunities for development, especially if more money is invested in the communities to improve their agricultural production and agroecological knowledge.

4.3.3. NGO representatives

This last group of interviewees consists of two NGO coordinators in charge of food security and food sovereignty projects in four other municipalities in the Department of Tarija, and the coordinator of the 'Right to Food with Economic Development' Project in La Paz, Bolivia. Their contribution to this research was important because they are working on improving the food security levels through local and agroecological production. Part of their work consists on providing training and education in campesino communities regarding civic and economic participation, sustainable agriculture, and leadership workshops. The information provided by this group was fundamental to the identification of policy and program alternatives using a food sovereignty approach.

Among all the participants, this group provided the most technical definitions for the concepts of food security and food sovereignty. Similarly to the definition used in this research, the participants described food security as the access, availability and use of nutritious foods. Tomas Figueroa, from CARITAS, added that these parameters depend on a variety of factors, such as "access to water, soil, seed, and an income to have access to the market". Erick Jurado, from AIPE, explained the evolution of the food security concept, arguing that it has moved from a biophysical approach (calorie intake measured quantitatively) to a more humanitarian view, where understanding the local conditions of each community is essential (qualitative approach). He mentioned that currently, food security has a developmental focus and food sovereignty is the

framework necessary to create public policy in the country. On this subject, Reynaldo Guzman, from ASOCIO, declared that food sovereignty is a precondition to having food security. According to Guzman, food sovereignty allows communities to control the agroecological and sustainable production of food - based on their culture and their local conditions – and not depend on external forces (markets and the national government).

The policy capacity of NGOs, according to the respondents, is very limited. Reynaldo Guzman mentioned that ASOCIO is trying to reach as many communities as possible, however, “the support [we provide] is not enough”. Tomas Figueroa says that CARITAS, with a staff of six people, is currently working in one municipality with 23 campesino communities in the areas of agriculture productivity and leadership training. Similarly, ASOCIO has nine full time positions working in two municipalities of Tarija (Entre Rios and Carapari). Their funding comes from international donors that support one or two projects per year. Tomas Figueroa added that unfortunately there is a lack of support and participation from local municipalities and other institutions. They all agree there has been some progress on the subject, but that more resources are necessary to have an impact. Some communities have managed very successful projects, increasing their production and income, while other groups do not have the same capability due to deteriorating environmental conditions or lack of leadership.

The projects that ASOCIO and CARITAS implement aim to promote agroecological techniques to help communities improve the quality, quantity and variety of agricultural products. All the projects they currently run have a food sovereignty approach and their main objective is to advance the levels of food security in the household by supporting the local production of environmentally sustainable foods. In addition to this, they also work with campesino leaders on workshops to improve community ties and to learn about climate change adaptation strategies. The work that AIPE does, although following the food sovereignty approach, is a bit different. Erick Jurado mentioned that the role of his organization is to provide training and support to twenty-two NGOs located around Bolivia, and to help coordinate the policy direction of this network of organizations. In the last twenty seven years AIPE has successfully implemented four major policy changes: 1) improvement of the nutrients given to pregnant women, 2) implementation of School Feeding Programs (SFP), 3) inclusion of

food security and food sovereignty to the educational curriculum, and 4) creation of a law that will consider food as a Human Right (not yet approved by the Bolivian State).

The participants mentioned that the national government has made some progress in the area of food security and food sovereignty in Bolivia. They believe that the recent constitutional changes and inclusion of the food sovereignty framework is indeed a very positive move; however, they were sceptical that the government is fully committed to this cause. Both Jurado and Figueroa added that the discourse of the president Evo Morales is not supported by concrete public policy direction⁸. They were also critical of the work of the municipalities, Guzman and Figueroa said that the current administrations neither have the knowledge nor the capacity to implement adequate food security and food sovereignty policies and projects. They commented that mayors prefer to spend their budget in non-agricultural infrastructure (such as sport courts, gymnasiums, or fences). Erick Jurado said that unfortunately, campesino communities do not demand resources to be spent on projects that would improve productivity, and believe that the municipality should spend only on schools, roads, and hospitals. For this reason, the participants in this group believe that it is important for their organizations to help communities not only with agricultural projects, but also with training and leadership workshops that will empower campesinos, allowing them to be part of the policy process. NGOs, according to Figueroa, play an important role in assisting municipalities and the national government in the implementation and creation of public policy. Guzman added that it is necessary to have a better coordination between all policy actors, including each of the communities.

⁸ They were very critical of Law 144 which allows the use of some transgenic seeds in Bolivia territory.

All three respondents believed that there are numerous opportunities to improve current levels of food security, under a food sovereignty approach. Guzman highlighted the ecological diversity of the region and agricultural potential of most communities, while Figueroa repeated the importance of the new constitution. Unfortunately, they also said that communities need to be able to improve their organizational structure and agricultural techniques to avoid current levels of food insecurity. In their final remarks, they advocated for more participation and collaboration between the national and municipal government. As articulated by Figueroa “a more aggressive approach at the departmental and municipal level” to reduce food insecurity and improve the quality of life in campesino communities. Although, according to Jurado, campesino communities should be the ones “to control, demand and transform public policies into reality”. Table 11 summarizes the findings from the semi-structured interviews.

Table 11 Semi-Structured Interview Themes Summary

	Campesinos	Municipal Authorities	NGO representatives
Concepts	Food security related to children nutrition. They were not familiar with the concept of food sovereignty.	Food security and food sovereignty understood from the agricultural productivity of each community.	Very technical definition of both concepts. From all the groups, they knew the most about this topic.
Capacity	Very low policy capacity. They depend on other actors.	Few resources are spent on agricultural productivity (less than 30% of the budget). Lack of personnel and information at the local level.	Limited policy capacity. Their work targets small campesino communities. They depend on international funding to function.
Implementation	Few projects are currently implemented. Most of them are targeted to children.	Main projects concentrate on access to water, seeds, and green houses. Few communities have benefited.	Working on campesino empowerment and education as well as small agricultural productivity projects.
Perceptions	More needs to be done by all levels of government. Community participation is fundamental.	Agreed with campesinos that more needs to be done by all levels of government.	They have seen a lot of progress on the issue, however, they believe that it is not enough and more can be done at the local level

5. Summary of Findings and Implications

This section summarizes the most important findings from the document analysis, the household survey and the semi-structured interviews. This information reveals policy repercussions that influence the criteria and the alternatives recommended in the next section of the research.

Main findings from the campesino household survey:

- Most households have very poor access to basic public services.
- The education levels in the households are low. Heads of households generally have only primary or no education. Also, less than half of school age children go to school.
- Campesino families have very low incomes. They do not produce enough food to sell to the markets, and they have to augment their revenue through temporary or seasonal work in the city or other countries.
- Households depend on government subsidies as well as departmental grants (PROSOL). Very few of them have access to loans.
- Campesinos in the region do not cultivate many products. The majority of households produce maize and potatoes, and very few of them can produce vegetables, legumes, or fruits. Most of what they produce is consumed among the family.
- Although the majority of campesino families use agroecological techniques such as crop rotation and organic fertilizers, very few of them know other agroecological techniques; especially irrigation techniques.

- Less than half of campesinos have received any training to improve the use of seeds, soils, or water (among other things). Only 5% have attended workshops on commercialization and climate change.
- Almost three quarters (69%) of households are deemed moderate or severe food insecure. The most affected municipality is San Lorenzo (with 95%).³

Main findings from the document analysis:

- The current Bolivian Constitution makes specific reference to the concept of food sovereignty (nine articles), and establishes the normative framework for the creation and direction of public policy.
- Based on this mandate, there are laws (3525 and 144) that create and inform the legal framework to develop food security and sovereignty policy. These laws identify some of the institutions responsible for working with other levels of government on food security. Their main objective is to improve campesino agricultural production.
- Politically, the NDP of Evo Morales focuses on food sovereignty as one of the pillars for achieving his economic and social projects. The TDP of the *Mancomunidad* does not make specific mention about food security or food sovereignty, however, its main objective is to promote agricultural productivity, sustainability and self-sufficiency in rural sectors.

Main findings from the semi-structured interviews:

- All policy actors know about the problems of food security at the local level, although they have different definitions for the term. Campesino leaders generally link it with the problem of malnutrition among children, while other actors see it terms of agricultural productivity.
- Although food sovereignty is a fairly new approach, the actors understand the importance of producing and consuming local food. This approach will

become more relevant as new projects are implemented at the municipal level.

- There was a clear consensus among all respondents regarding the lack of resources and support. More projects are needed, and respondents felt that they should be coordinated by the communities themselves, with support from the municipality, NGOs and the national government.
- The current projects should be based on the food sovereignty approach: agroecological and local production of nutritious foods, with the participation of an empowered community.
- Participants agreed that more work on this area must be done at all levels of government (national, municipal, community). It is important for all actors to coordinate policies and projects that respond to the necessities of each community. Campesino households need to start demanding better funding of agroecological projects from the municipalities and NGOs. Decisions should include the input of all actors.
- Communities, with the support of NGOs and local governments, need to be educated about how to mitigate climate change and start to work on adaptation strategies. Failure to do so will increase the levels of food insecurity in the region.

5.1. Policy Implications

The policy implications of the analysis above suggest that policy alternatives to improve food security levels in campesino households should consider:

- Food sovereignty is the constitutional and normative framework
- More resources at the national and local levels need to be invested in local agricultural projects that improve the campesino access, availability, and use of food, reducing their vulnerability to food insecurity

- Initiatives need to be participatory and include the input of all policy actors, especially campesinos themselves. Alternatives based on the food sovereignty framework should empower local communities, and investment should be directed towards the education and training of campesino communities
- Education for adults and children is fundamental to empowering communities and preparing them to be active policy actors

6. Policy objectives, Criteria and Measures

This section defines the policy objectives necessary to improve food security levels in campesino communities through the approach of food sovereignty. It also describes the criteria and measures for analysing and recommending the best policy alternatives.

6.1. Policy Objectives

Keeping in mind the Bolivian Constitution and its objective of “[g]uarantee[ing] food security and food sovereignty, prioritizing the production and the consumption of agricultural food originating in Bolivian territory”, the policy recommendations in the next section aim to:

- In the short term (3-5 years); reduce household food insecurity levels from moderate to low and severe to moderate in half of the communities. Special attention should be paid to vulnerable groups such as mothers and school age children.
- In the long term (5-10 years); significantly reduce levels of severe/moderate food insecurity in all the communities; improving the consumption of a variety of nutritious products, stabilising the economy through local markets, creating sustainable programs managed by the communities, and preparing campesinos for climate adaptation.

To achieve these objectives, policies should be able to improve the community's availability, access, use and vulnerability to food. The alternatives should also consider the policy capacity of each municipality (in terms of budget and other resources). Finally, the recommendation should include the participation of all policy actors, respecting the food sovereignty of each community.

6.2. Criteria and measures

To determine the most appropriate policy alternatives that best achieve the short and long term objectives described above, the study uses four different criteria: cost, stakeholder participation, effectiveness, and implementation ease. Since this research is targeted toward policy alternatives to be implemented by municipalities the criteria that this research uses is intended to be evaluated at the local level. The criteria intends to provide municipal decision makers and other actors with a method to compare the alternatives, keeping in mind the policy capacity of the municipality, geographic limitations of the communities, and the constitutional and legal framework of the Bolivian state.

Table 12 shows the definition of each criterion as well as the measures and the score for each of the rankings: one point for low, two points for medium and three points for high performance (except for Cost where the score distribution is reversed). The maximum score that an alternative can achieve is twelve; therefore, the policy alternative with the highest score represents the most desirable option. In this research all the criteria is weighted equally because each criterion is as considered as important as the others. However, decision makers can determine which criterion is the most important to them, and justify their decision on different parameters. The intention of this research is to provide policy actors with a set of alternatives, each with their own advantages and disadvantages, and help them decide which one is the best option according to their own local realities, criteria and priorities.

Table 12 Criteria and Measures

Criteria	Definition	Measurement	Score
Cost	How much does it cost to implement the policy alternative per family and per year?	High: more than 100 USD per family Medium: Between 50 and 99 USD per family Low: Less than 50 USD per family	High (1) Medium (2) Low (3)
Stakeholder participation	How many of the policy actors are involved in the implementation of this policy? And, are campesinos included in the planning, implementation and maintenance of the option?	High: Municipalities, NGOs, and campesino communities or organizations Medium: One of the actors is not included Low: Campesinos are excluded and only one actor implements the policy	High (3) Medium (2) Low (1)
Effectiveness	Does the policy improve food security in terms of availability, access, use and vulnerability of food?	High: 3 out of 4 parameters improve Medium: 2 out of 4 parameters improve Low: Only 1 parameter improves	High (3) Medium (2) Low (1)
Implementation ease	How difficult is it to implement the policy based on the constitutional legal framework, as well as the policy actors' capacity.	High: Policy can be implemented with minor changes Medium: Requires some administrative changes Low: Requires major administration changes and policy capacity	High (3) Medium (2) Low (1)

6.2.1. Cost

This criterion measures the financial cost of implementing each policy alternative based on the amount that a municipality would have to spend per family for one year. Each municipality in the *Mancomunidad* has a different demographic situation; therefore, the costs for each alternative are calculated using the smallest and the biggest

municipalities (Yunchará and San Lorenzo respectively). This criterion does not intend to provide an extensive cost/benefit analysis of each option. However, since estimated costs is an important consideration for any policy decision maker, in many cases the costs of implementing a program might be shared by different actors, allowing municipalities to invest in more than one program.

Costs are estimated using the number of families benefited by the alternative as a unit. There are around 1400 in Yunchará, and 6400 families in San Lorenzo. The estimates for the cost of each program are calculated using public documents from NGOs, the WFP, and the municipalities themselves. The calculations for the total costs and other breakdowns (i.e. administrative and other costs) can be found in the appendix. Based on the total estimates, if the alternative costs more than 100 USD per family per year, the option scores high (1 point). If it costs between 50 to 99 USD, it ranks medium (2 points). If the program expenditure is below 50 USD per household, the cost score is low (3 point).

6.2.2. Stakeholder participation

This criterion evaluates the participation of local policy actors such as the municipal government, campesino communities and organizations, as well as NGOs. This criterion is important because one of the pillars of food sovereignty is the inclusion of the local actors in the decision and implementation process, especially campesino communities. The food sovereignty process aims to improve the participation of campesino communities in the conceptualization, practice and research of the problem. The policy alternatives should promote participation, citizenship and democracy among campesinos community.

The ranking and the scores for each alternative are based on the number of actors included in the policy process, taking into consideration that campesino communities should be included in the planning, implementation and maintenance of the alternate. If the alternative includes all three actors, it is considered to have high participation (3 points). If the option excludes at least one of the actors, it has a medium participation (2 points). Finally, if the policy option only requires one of the policy actors,

and does not allow campesinos to participate in the process, it scores low in participation (1 point).

6.2.3. Effectiveness

Effectiveness is used to measure whether or not the policy alternative improves the four food security components: availability, access, use and vulnerability. This criterion is necessary to evaluate if the alternatives are able to reduce the levels of food insecurity in the communities by:

- Increasing the production and variety of food (availability)
- Improving the access to the market for other products (access)
- Increasing the consumption of nutritious and local food (use)
- Decreasing their chances to become food insecure (vulnerability)

If the alternative aims to improve at least three out of the four parameters, efficiency is high (3 points). If only two of the parameters are targeted, the alternatives' efficiency is medium (2 points). If only one of the parameters is affected, efficiency is low (1 point).

6.2.4. Implementation ease

This last criterion evaluates how difficult it would be for the municipalities to implement the policy alternative. As the research shows, the policy capacity of all local governments is limited; therefore, the policy alternatives should consider the preparation of the local governments, its expertise, resources and collaboration with other actors. Implementation ease also considers the current legal and constitutional framework to execution of the alternative.

If the alternative can be implemented using existing programs, with minor modifications to the administration and delivery, it is considered to have a high implementation ease (3 points). If the alternative requires some administration and legal modifications, such as the creation of new municipal agencies, it ranks medium in this

criterion (2 points). Finally, if the alternative requires major changes to the current policy structures, such as new legislation changes or institutional restructuring, it ranks low in administrative ease (1 point).

7. Policy options and Analysis

This section describes each of the policy alternatives and evaluates them using the criteria outlined in the previous section. The option with the highest score is the recommended policy option that the municipalities of the *Mancomunidad* should implement to achieve the short and long term objectives described in Section 6. Although the national government plays an important role in the creation and implementation of food security and sovereignty policy, it is not the intention of this paper to recommend alternatives or initiatives at the national level.

It is important to mention that all policy options require the local governments to increase the amount of funds for food security and sovereignty projects. A report published by the WFP and the Ministry of National Planning and Development (2008, p. 105) recommends that 75% of all revenues from the IDH should be destined for the agricultural sector (currently 30%). The intention of this section is to recommend to municipal authorities and other actors on how to best allocate those resources, depending on their local conditions. Although the research recommends only one of the options to be implemented in the short term, each of these alternatives should be executed in the next five to ten years. As mentioned before, the long term objective is to support campesinos to have healthy and sustainable communities.

7.1. Enhanced School Feeding programs (ESFP)

This policy can be considered to be the 'enhanced status quo' alternative. All the municipalities of the *Mancomunidad* currently run a School Feeding Program (SFP). The quality and quantity of food provided by the SFP differs in each municipality, but in general, the nutritional requirements (calories and micronutrients) provided in the schools is not sufficient. Some studies done by IICCA show that in rural areas the SFP provided less than half of the required intake especially in regards to vitamins, iodine

and iron. In the case of Uriondo, municipalities do not participate actively in the implementation of the programs. One of the most notorious problems is the quality of the food purchased at low costs. The lack of sufficient resources has forced schools to buy inexpensive food such as crackers and noodles, with low nutritional values. The current amount spent in the SFP per student averages 0.25 USD (IICCA, 2011, p.29). Doubling the amount of money spent on each child would provide better sources of nutrients from fruits and vegetables as well as resources for the school garden and training programs.

Based on studies conducted by the World Food Program (2009), SFPs are one of the most effective and efficient strategies to improve food security levels. The program targets one of the most vulnerable populations, children, to reduce dangerous levels of undernourishment. Children which benefit from the program show an improvement in cognitive development as well as increased attendance levels and reduced drop-out rates. SFPs are proven to increase children's education because their parents benefit from sending them to school.

This policy recommendation suggests improving the current SFP by increasing the amount of resources designated for its implementation, and allowing the participation of parents, teachers and the community in general. The extra resources spent on the program should be used to:

- 1) Improve the quality and quantity of the current food ration (short term)
- 2) Increase the purchase of local products, directly from the campesino families in the community (local procurement)
- 3) Establish a school garden program, managed by the students, teachers and parents in the community (vegetables and fruits)
- 4) Include workshops on food security and food sovereignty within the school curriculum (for parents and children in the community)

One of the strengths of this alternative is the fact that the programs are already in place; therefore, implementing the alternative requires only some adaptations to the current administration. Furthermore, the program contains an education component directed at children and parents, and provides a short term solution to food security

levels in the family through the provision of food. Enhanced SFPs allow parents to learn about nutrition and also participate, with their children, in the creation and maintenance of school gardens. Schools in the community are located in the town centre; therefore, improving the current SFP allows the whole community to contribute actively in the process.

Improving local procurement will also increase the demand for products from campesino households, which in turn increases campesino family's income. If the money from the municipality is spent locally, the resources stay within the region, creating a sustainable market. The success of this initiative will depend on the productivity of the community and the inclusion of all households in the improvement of the program.

Costs: In order to double the amount spent on the SFP, the municipalities would have to at least double the investment in the program. The current SFP costs between 55,000 and 300,000 USD a year (in Yunchará and San Lorenzo respectively). Increasing the amount spent per child and per year from 50 to 100 USD would result in an increase ranging between 110,000 to 600,000 USD. This represents around the 9% of the total municipalities budget. For a description on how resources are allocated, refer to the appendix. When the cost per family is calculated, this option ranges between 80 USD in Yunchará, and 95 USD in San Lorenzo. The cost of this alternative is medium (2 points)

Participation: This alternative allows campesino households to be involved in the administration and implementation of the program. In most cases, campesino mothers help out with the preparation and distribution of the food, as well as the maintenance of the school garden. Also, if local products are procured from the communities, campesino households will have a stronger link to the program. Municipalities are also involved in the implementation and coordination of the program, not only by providing the resources but also by training teachers and campesinos through workshops provided by nutritionists and agronomists. NGO organizations are currently supporting some communities with SFP; their support is important for the implementation of this project. This option includes all policy actors; hence, it ranks high in participation (3 points).

Effectiveness: Enhanced SFPs improve the access, availability and use of food in campesino communities. Children benefit the most from this program as they receive an

adequate ration of food. Moreover, improving the administration and local procurement of the program increases demand in the community, and provides an extra income to the families that sell their products. In addition, this initiative has an educational component that allows parents and children to understand the importance of food security and sovereignty. These programs have shown to significantly improve the food security levels in the poorest and most vulnerable communities (WFP, 2009). For this reason ESFP ranks high in effectiveness (3 points).

Implementation ease: This option has the strongest normative and legal framework for its implementation. The SFP is supported by the national government, local municipalities and NGO (such as the WFP). However, in order to improve the delivery of the program as specified in the ESFP option, it is necessary to implement some administrative changes (setting up parent groups and coordinators at the local level). For some municipalities and schools this will be easier than in others, but in general, it is necessary to improve the capacity of the actors involved, such as the parents, teachers, and the municipality. This option scores medium in this category (2 points).

7.2. ‘Campesino a Campesino’ program (CAC)

According to small farm studies done by La Via Campesina and other authors such as Michael Rosset, Braulio Machin Sosa, Adilen Maria Roque Jaime and Dana Rocio Avila Lozano (2011), the Campesino to Campesino Agroecological Movement (MACAC for its name in Spanish, or CAC) is one of the best alternatives to improve the food security and food sovereignty in rural communities. According to one of their studies in Cuba they found that campesinos were able to improve the productivity and variety of food by spreading agroecological techniques rapidly and successfully among campesinos, contributing to the evolution of better agricultural practices that strengthened the communities, and developing additional benefits including resilience to climate change.

Campesino a Campesino programs have been developed in many parts of the world as a reaction to the failure of the agribusiness model. Miguel Altieri (2010) argues that improving the productivity of small farmers is the key to Latin American’s food

security and food sovereignty problem. He explains that, contrary to popular belief, small campesino farms are more productive and better at resource conservation than the corporate agricultural model (p.122). By allowing more products to be cultivated, small farms increase the overall food production compared to monoculture practices (which produce more per yield). The author concludes that small farms increase the community's sustainability and makes them more resilient to climate change.

Currently, the recent laws of the Bolivian state call for a similar agricultural model, based on campesino production instead of large agricultural business models. Furthermore, all the NGOs working with campesino communities in the *Mancomunidad* and Tarija support this agricultural development model because it allows the adaptation of strategies to local realities. Agroecological CAC production reduces the dependency of the farmers to chemical fertilizers and encourages them to produce local products.

This policy alternative recommends that municipalities invest in the implementation of a CAC program in each of the municipalities. This undoubtedly requires municipalities to create a department in charge of organizing communities as well as providing resources such as seeds and tools. The program should have the support of local NGOs that have more experience in the implementation of these types of projects. The investment on the program should be used to implement the following strategies:

- 1) Workshops on agroecological practices (bio fertilizers, pest control, crop rotation, etc.)
- 2) Local investment in seed and irrigation systems
- 3) Campesino leadership training and education which include the exchange of experiences between communities

According to La Via Campesina, the transition to agroecological practices allows campesino families to depend less on the markets, "putting [them] in control of their own production systems, restoring degraded soils, living in harmony with the Mother Earth, producing healthy food, improving the economic viability of peasant agriculture, and building food sovereignty up from the level of the peasant family to the national level"

(Rosset et al., 2011, p.165). However, in order to achieve a sustainable system, municipalities will need to invest a considerable amount of their IDH revenues in the agricultural sector.

Costs: The estimates for this alternative are separated into money spent on agroecological development, leadership training, and administrative costs. The project uses information from current programs managed by the IICCA. Similar projects can be implemented by the municipality around other communities, expanding the network between campesino households. This project benefits around 200 families in the *Mancomunidad* at a total cost of 60,000 USD, which is around 300 USD per family in one year. This option ranks high in this criterion (1 point).

Participation: This option ranks high in participation (3 points) because it requires the participation of all policy actors. Campesinos learn agroecological and leadership skills through the collaboration of the municipal governments and NGOs that are currently working in these projects. Also, CAC strengthens the networks between agricultural communities, providing a range of social benefits such as the creation of social capital. Among all the options, CAC is the strongest alternative in participation because it allows the communities, local governments, and NGOs to learn from each other, collaborating as equals. This option scores high in participation (3 points).

Effectiveness: Research has showed that CAC is one of the most effective policies to reduce food security and food sovereignty among campesino communities (Altieri, 2010; Rosset, et al. 2011). The programs improve the productivity of small farmers and increase the availability of local foods. In addition, it improves better commercialization of their products, providing extra income to access the local markets. CAC also improves the knowledge of campesinos regarding nutrition, sustainability and climate change adaptation. Finally, as mentioned above, small farms are less vulnerable to extreme weather conditions. The effectiveness of this option is high (3 points).

Implementation ease: CAC movements are not new, and they have been successfully implemented in many Latin American and African countries. However, setting up the administrative and logistical framework does require some work. At the moment, NGOs are implementing some programs that reach some communities; however, if

municipalities are to take the lead, they will need to invest in developing the capacity and knowledge to reach all communities. This option is not easy to implement, however, according to the current constitution and national laws, the framework to develop a CAC reform allows communities and municipalities to implement these programs without the need to restructure the current policy environment. The alternative ranks medium in this criterion (2 point).

7.3. Direct money transfers (DMT)

This study has shown that campesino families in the *Mancomunidad* currently benefit from several subsidies and grants that come from both the national and the departmental levels of government. The subsidies are distributed to children, mothers and seniors are a very important source of revenue for the family; however, they do not benefit everyone in the family, nor do all households have access to them. In addition to this direct money transfers, almost all communities receive the departmental grant 'PROSOL' (for its name in Spanish), which is 290 USD per year. The PROSOL funds must be spent on agricultural projects such as buying seeds for the community, vaccinating the livestock, or investing in agricultural tools.

Economists Rodrigo Orair and Juan Ernesto Alonso (2010) from the 'Universidad Estadual de Campinas', in Sao Paulo, conducted an econometric study in Brazil that estimated the impact of income on the levels of food insecurity. The study evaluates the effectiveness of Brazilian Direct Money Transfer (DMT) programs which are used to reduce poverty levels and improve the distribution of resources in Brazil. The authors argue that although the programs have improved the conditions of many families, they have not created enough incentives for individuals to overcome poverty by themselves, creating dependency on the transfers. However, DMT allow individuals to make their own decisions in the market, allocating their resources according to their own preferences and perceived needs.

This alternative recommends municipalities to create a similar grant program such as the PROSOL (distribution and amount). The grants should be given to projects that improve agricultural productivity for all the families in the community. Therefore, the

projects need to reach all members, allowing everyone to be part of the decision process. The grants can be used with other projects that the community has already in place.

Costs: Using the PROSOL as a benchmark, the amount that each community can receive is 290 USD per year. San Lorenzo, with 79 communities would have to invest around 23,000 USD, while Yunchará (43 communities) would contribute with 12,500 USD. However, when these amounts are divided by the number of families in each municipality, the cost range is 11 USD for families in Yunchará and 4 USD in San Lorenzo. In this criterion, the option ranks low (3 points).

Participation: DMTs do not require the active participation of all actors. The application process allows the community to make a democratic decision on how to spend the money, but once it has been approved, in most cases, the municipality does not get involved. Some NGOs might help the community with the administration of resources, but in general the subsidy is only administered by the community. For this reasons, this option ranks low in participation (score 1).

Effectiveness: According to Orair and Alonso (2010), although this option improves the access of the population to the market, it does not provide a long term solution for poverty and food insecurity. DMT might increase the availability of food (productivity projects) however; the option does not improve people's knowledge about nutrition and food sovereignty. Also, communities become dependent on these transfers and this might lead to 'assistentialism'. DMT ranks low in effectiveness (1 point).

Implementation ease: This alternative is the easiest to implement from all the options. There is currently a model in place to identify and award the transfers in the communities. Municipalities could use the current departmental system (PROSOL) and provide the resources. Although the municipality must first pass legislation allowing the transfer of funds, implementation of this policy is very feasible. This policy ranks high (3 points).

7.4. Large agricultural infrastructure projects

This policy alternative aims at improving the current agricultural infrastructure in the campesino communities. Large infrastructure projects could be large irrigation systems that benefit many campesinos communities, roads to improve the transportation and access between communities, and construction of buildings such as storage and processing plants (e.g. Fava bean flour manufacture). As the research shows, campesino communities in the *Mancomunidad* have very low access to good public services and other decent infrastructure. Access to water is one of the biggest concerns in all communities; therefore, large irrigation projects can benefit large number of families, providing one of the most essential agricultural requirements (water). Furthermore, in order to improve the connection and commercialization between communities within the municipalities, it is necessary to have good roads and better access to the markets. Finally, storage units and processing plants help communities cope with difficult times and add value to their products.

Currently, municipalities spend on infrastructure projects such as sports complex, schools and fencing. This is not to dispute the usefulness of some of these projects to the community; however, preference should be given to those initiatives that contribute to agricultural productivity. Although this policy represents bigger costs for the municipality, this groundwork is necessary to allow better communication and commercialization between communities, as well as for their adaptation to climate change (especially future access to water sources). It could also be implemented in conjunction with other municipalities, providing a good channel to improve collaboration within the *Mancomunidad*.

This alternative recommends municipalities to invest in one major infrastructure project per year. In order to calculate the costs of this alternative this research uses an irrigation project as an example of such initiative. Although roads and storage buildings are important, access to water is the most pressing concern for municipalities and communities at the moment. The data for the estimates comes from one of the reports prepared for IICCA, which is currently working on similar plans with international nations and the department.

Costs: This option uses estimates from a current large irrigation project⁹ that will benefit 3065 campesino households by 2015. The costs are divided into: identification of water sources (over 200); construction of infrastructure (irrigation systems and dams); training of communities (correct use of water systems); and project management (administrative and other costs). The total cost of the project is almost 3.8 million USD for four years. The approximate cost per family, per year, ranges between 345 USD in the first year and 241 USD in the fourth year. The cost of this option is high (1 point)

Participation: Large infrastructure projects allow the participation of the community and other NGOs. In the planning process, communities are consulted about their necessities. Also, some campesinos are hired to work on the construction of the project, allowing them further participation in the project. Most large scale projects include collaboration with NGOs, by sharing resources or knowledge. However, one of the most common complaints from campesinos is that infrastructure projects do not allow the community to actively participate in the process, especially after the project is complete and it needs maintenance. This option ranks medium in participation (2 points).

Effectiveness: Infrastructure spending is an effective investment to reduce food insecurity in the long term. Better irrigation systems increase both the availability and variety of food, improving their access to water every year. Although these projects are costly and do not improve food security levels in the short term, their effectiveness is high because they reduce the communities vulnerability to climate change. For this reason this alternative ranks high (3 point).

Implementation ease: Among all the alternatives above, this policy is the most difficult to implement. The planning, execution and maintenance of large infrastructure projects

⁹ Created by the IICCA and the Departmental Government of Tarija

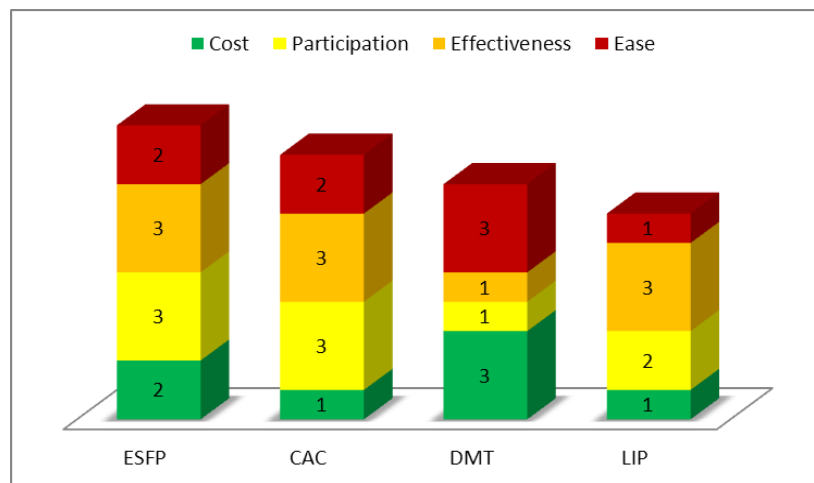
such as irrigation systems require a lot of time and effort. Every stage presents its challenges. During planning, this large project requires the consensus of many actors that decide on the location and size of the project. During construction, the municipality and the community need to be very involved to avoid delays (which is not always the case). Finally, maintenance of the project needs to be done regularly, as many water sources are diminished or the irrigation systems brake. Infrastructure ranks low in implementation ease (1 point).

Table 13 and Figure 3 summarize the ranking and scores of each option using the suggested criteria.

Table 13 Policy Evaluation Matrix

	Enhanced School Feeding Programs (SFP)	Campesino a Campesino (CAC)	Money Transfers (MT)	Infrastructure
Cost	Medium (2)	High (1)	Low (3)	High (1)
Participation	High (3)	High (3)	Low (1)	Medium (2)
Effectiveness	High (3)	High (3)	Low (1)	High (3)
Implementation Ease	Medium (2)	Low (2)	High (3)	Low (1)
Total Score	10	9	8	7

Figure 3 Policy Evaluation Scores



8. Policy Recommendation

The research conducted for this study shows that, within the food sovereignty framework, the best policy alternative should: a) have the ability to be implemented within the municipality's capacity (cost and ease); b) be inclusive of the community and other policy actors (participatory); and c) promote agroecological production, consumption and commercialization of local foods (effectiveness). The criteria matrix used in this study allows the comparison of each alternative using these parameters and recommends the option that best achieves the conditions above. The final decision, however, depends on each policy decision maker.

The research recommends improving the current SFP by doubling the amount of money that is allocated for each child, as well as implementing certain strategies such as school garden programs and local procurement. This alternative scored high in both effectiveness and participation, and medium in cost and ease. This option responds to the campesino leaders' concerns about the health and future of their children. It also uses an existent program, to expand the benefits for each household in the communities. As mentioned, the benefits of SFP are multiple (cognition, attendance, future earnings, etc.) making it a cost efficient alternative to reduce food security levels and to improve food sovereignty.

One of the most important benefits of ESFP is the education component directed to both children and parents. As opposed to current programs, this option recommends the participation of the community by allowing everyone to learn and be part of the implementation of the program. Implementing school gardens in the community centre allows the production of nutritious food given to the children, but at the same time it allows parents to understand the importance of consuming vegetables, legumes and some fruits. Not only that, but this alternative opens up the possibility of having a sustainable program that will not depend on the municipality or the national government.

The WFP Executive Director, Josette Sheeran, declared that “[i]n the face of global crises, we must now focus on how school feeding programmes can be designed and implemented in a cost-efficient and sustainable way to benefit and protect those most in need of help today and in the future” (WFP, 2011, p. 1). These programs will prepare children for the future, and allow parents to contribute to the development of their families. Implementing the ESFP provides short term benefits (better calorie intake), as well as benefits in the future (better knowledge for children and their parents). This alternative clearly reflects the policy objectives listed in section 6 of this research.

It is important to mention that the other alternatives should also be implemented as a means of support for the campesino families. Although CAC and infrastructure spending are costly, they can still be implemented if the municipalities spend at least 75% of their IDH revenue on agriculture. If more resources are designated to agroecological production and food sovereignty, all alternatives mentioned in this research can be implemented. Collectively, all the options above allow for a coherent strategy to reform the campesino sector and achieve the constitutional objectives stated in Article 16.

9. Conclusion

Campesino families in the *Mancomunidad* show severe levels of food insecurity levels because of many reasons such as poor access to water, seeds, agricultural resources, and very low levels of education. Neo-liberal approaches to food security put too much emphasis on the agribusiness sector and small farmers have been displaced for lack of competitiveness. Regrettably, campesinos have not received adequate training and resources from the different levels of government and its participation in the Bolivian economy has decreased significantly since the 1980's. This research shows that campesino communities in the *Mancomunidad* have been greatly affected and their income, production and education levels do not afford them a better quality of life.

The current Bolivian government adopted the food sovereignty paradigm as a means to improve food security levels and provide better assistance to small farmers, through the democratization and empowerment of campesino communities. The food sovereignty paradigm is an important step towards improving the lives of many Bolivians. This approach provides an alternative to the market system and allows the production of a variety of sustainable, nutritious and healthy products. Furthermore, it promotes the right of campesinos to control their agroecological systems and “puts the aspirations, needs and livelihoods of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations” (La Via Campesina.org, 2011).

Unfortunately, although the national government intentions are good, this study shows that campesinos have not seen significant improvements in their communities. Municipal governments need to increase the investment on agricultural productivity (from 30% to 75%), and empower campesino communities through education and resources. One of the most feasible alternatives is to improve current School Feeding Programs that can educate children and parents, involve the community, and increase the demand for local production. Moreover, although this recommendation is the less costly, and

easiest to implement given the current municipal capacity, there are many other options that should be implemented in the medium (campesino a campesino programs) and long term (large agriculture infrastructure projects).

Since this research is limited to a small sample of campesino households in only four municipalities, considerations for future research would be investigating the current needs of other rural communities in Bolivia. Furthermore, researchers and government officials should continue to study the food security problem from a food sovereignty framework. Hanna Wittman (2011, p.89) argues, that the “consolidation of knowledge around the potential of food sovereignty is important because its proponents and practitioners—both in theory and practice—challenge conventional wisdom and policy” (p.89). The adoption of this framework by the Bolivian government is an important research window to understand the effectiveness of more democratic and participatory alternatives.

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Appendices

A. Interview schedule

Sample open ended questions

Food security/ sovereignty definition and general knowledge

- What is food security and food sovereignty? How do you define these concepts?
- What is the current situation of your community/municipality in this area?

Policy capacity

- How many people in your community/municipality/organization are currently working on specific projects that improve agricultural productivity and access to food?
- Do you have any information on the current levels of food productivity in your community?
- Do you know the levels of food security or any other nutritional information?
- How much money/resources does your community/municipality/organization spend on agricultural productivity? Where do you get these resources from?

Policy implementation

- How do you apply these concepts to the work in your community/ municipality?
- Can you tell me some of the current projects in your community/municipality to improve agricultural production? Do you know of any future projects?
- Do you know of any other projects that might help improve levels of food security in your community?

Policy perception and other comments

- What do you think is the role of the national/ municipal/community levels of government in the implementation of agricultural productivity projects?
- What do you think of the current effort of each level of government? Do you think they are doing enough?
- What is the role of the non-governmental organizations?
- What level of government (national, municipal, community) is responsible to improve agricultural production/ food security levels?
- What are the major challenges/opportunities that your community face in this area?

B. Survey sample questions

Here are some sample questions in the survey used to interview rural households of the community “Héroes de la Independencia”:

Introduction:

Good morning. We are conducting a 30-45 minute survey on the level of food security/insecurity in the municipalities of Yunchará, El Puente, Uriondo and San Lorenzo. Your household has been randomly selected to be part of this research. We will not record your name or your address in this survey to protect your confidentiality. Furthermore, the results of this study will not show individual answers. There are no risks or benefits to your wellbeing for completing this survey. You might decide to stop at any time without any repercussions. If you have any questions you may contact Dr. Hal Weinberg, Director of SFU's Office of Research Ethics, by email at hal_weinberg@sfu.ca or by phone at (+1) 778-782-6593.

1. Demographic and household characteristics:

1.1) Municipality:	
1.2) Community:	
1.3) How many people live in the household?	
1.4) How many minors under 12?	
1.5) How many older than 12 but younger than 60?	
1.6) How many older than 60?	
1.7) How many women?	
1.8) How many rooms do you have in the house?	
1.9) How many rooms do you use only to sleep?	

1.10) Do you have a washroom/toilet in the house?	Yes	No	NA/DK
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1.11) The property/house where you live is?

Yours	Rented	Borrowed	I'm taking care of it	Other: (Specify)	NA/DK

1.12) What services do you have in the house?

	YES	NO	NA/DN
Water			
Phone			
Electricity			
Sewage			
Gas connection			

2. Education:

2.1) What is the highest level of education of the head of household? (Please check one)

No formal education	Primary School	Secondary School	Other: (Specify)	NA/DK

2.2) If you have children, do they go to school? (Please check one)

Yes, all of them	
Yes, but not all of them	
No	
I don't have children	
NA/DK	

3. Household Income:

3.1) What is the monthly average income for the following?

	Bolivian (\$)	NA/DN
Monthly salary		
Temporal/Seasonal salary		
Rent		
Pensions		
Others: (Specify)		

3.2) What is the annual average income for the following activities?

Activities	Bolivian (\$)	NS/NR
Agriculture		
Livestock		
Handcrafts and other sales		
Remittances from family abroad		
Others: (Specify)		

3.3) Do you receive any subsidy or welfare from the state?

Name	Amount in Bs.	How many times per year?	What do you use it for?
Juancito Pinto (Students)			
Juana Azurduy (Mothers)			
Renta Dignidad (Seniors)			
PROSOL (Agriculture)			
Others: (Specify)			

4. Land and production:

4.1) How many M²

Area:		Ownership: 1. Owner 2. Rented 3. Borrowed 4. Communal 5. Others	Area of cultivated land M ² / Has.	Area of land for grazing M ² / Has.	Area of land not used M ² / Has.	
M ²	Has		M ²	Has	M ²	Has

4.2) Have you had access to any loans or credits to improve the production of your land?

Name of credit/loan	No	Yes	Amount	Interest rate	Paid?		Year you got the loan/credit
					Yes	No	
FONCASOL							
ANED							
FADES							
Caja los Andes							
Other banks							

4.3) What are the main agricultural products you produce in your land and what do you do with them?

Product	Amount produced		Destiny of the production (% Percentage)				Do you use any chemical products or pesticides			What type of seed do you use?	Type of water irrigation system
			Family	For sale	For seed	Others	Yes	No	NA /DK		
	Total	Unit									

4.4) Do you have farm animals and what do you with them?

Animal	How many?	Do you get any products from it?	Destiny of the production (% Percentage)			
			Household consumption	For sale	Barter	Others: (Specify)

4.4) Have you or any member of your family attended workshops or classes for the following subjects?

	Yes	No	NA/DK
Soil			
Agriculture			
Water			
Livestock			
Fish farming			
Climate adaptation			
Commercialization			

5. Questions about food security:

Please indicate the level of agreement to the following statements by checking with an X:

	Yes	No	NA/ DK
5.1) Members of the household had to worry about the availability of food before they could buy or receive more food?			
5.2) Foods were finished before the household members had money to buy more food			
5.3) Household members had to use all their money to be able to have access to a variety of healthy food			
5.4) Any household member 12 years old or older had to reduce the amount of food or was not able to have what he/she consumed because they did not have enough money to buy food			
5.5) Any household member 12 years old or older had to eat less because there was no money for food			
5.6) Any household member 12 years old or older felt hungry, but did not eat because there was no money for food			
5.7) Any household member 12 years old or older lost weight because he/she did not eat enough food because there was not enough money to buy it			
5.8) Any household member 12 years old or older had only one meal in a day, or did not have any food because there was not enough money to buy it			
5.9) Any household member younger than 12 years old was not able to have access to a variety of healthy food because there was no money for it			
5. 10) Any household member younger than 12 years old was not able to have access enough food because there was no money for it			
5.11) Any household member younger than 12 years old did not have enough food because there was no money to buy it			
5.12) Any household member younger than 12 years old had to reduce the amount of food or was not able to have what he/she consumed because they did not have enough money to buy food			
5.13) Any household member younger than 12 years old had skip a meal there was no money for food			
5.14) Any household member younger than 12 years old felt hungry, but did not eat because there was no money for food			
5.15) Any household member younger than 12 years did not have any food for an entire day because there was not enough money to buy it			

C. Bolivian constitutional articles

FUNDAMENTAL RIGHTS, Article 16, Literal II: The State has the obligation to guarantee food security of the nation, through healthy, adequate and sufficient food for the people.

INTERNATIONAL RELATIONS, Article 255, Literal II, Number 8: The negotiation, subscription and ratification of any international treaty would have to follow the principles of food security and sovereignty of all people. It prohibits importing, producing or commercializing genetically modified organisms and toxic elements that might harm the public's health and the environment.

DISTRIBUTION OF DUTIES, Article 300, Literal I, Number 16 and Article 302, Literal I, Number 12: It is the exclusive duty of the departmental and municipal autonomic governments to promote projects of alternative and renewable sources of energy to preserve food security in the nation.

GENERAL PROVISIONS, Article 309, Number 4: The state's economic organization includes business and other economic bodies that belong to the state, and they should achieve the main objective of promoting economic democracy and attaining food sovereignty for all the population.

WATER RESOURCES, Article 375, Literal II: The State will regulate the sustainable use of water resources and irrigation basins, food security and basic services, valuing the uses and traditions of each community.

LAND AND TERRITORY, Article 402, Number 1: The State has to promote the planning of new human settlements to achieve a rational demographic distribution and better use of the land and other natural resources, and provide them with education, health, food security and productivity.

RURAL SUSTAINABLE DEVELOPMENT, Article 405, Numbers 1- 5: Rural sustainable development is a fundamental pillar of the economic policies of the State, therefore it will prioritize actions that would promote the economic development of the

rural communities with emphasis on the food security and food sovereignty of the people.

RURAL SUSTAINABLE DEVELOPMENT, Article 407, Number 1: One of the State objectives of the rural development policies is to coordinate actions with departments and municipalities that will guarantee the food security and sovereignty, prioritizing the production and consumption of products produced in the Bolivian territory.

D. Policy options costs

Enhanced School Feed Program Costs - 95 to 80 USD per family						
	Schools	Students	Current SFP Cost (Child/year)	Increase Cost for ESFP (Child/year)	Current SFP Total Costs	Proposed Cost for ESFP
Yunchará	30	1100	50	100	55000	110000
San Lorenzo	60	6000	50	100	300000	600000

ESFP Budget allocation			
	Percentage	Yunchará	San Lorenzo
Food items and equipment	60	66000	360000
Admin and management	20	22000	120000
School Garden project	10	11000	60000
Training and education (teachers and parents)	10	11000	60000
Total Costs	100	110000	600000

Campesino a Campesino project Cost - 300 USD per family	
Agroecology	
Water	10145
Seeds	580
Soil	812
Climate adaptation	580
Leadership training	0
CAC	10435
Commercialization	7536
Project Management	0
Personnel	20145
Administrative	9420
Total	59652

DIRECT MONEY TRANSFERS- 11 to 4 USD per family		
	Yunchará	San Lorenzo
Communities	43	79
DMT (290 US per community)	12470	22910
Admin Costs	3010	5530
Total	15480	28440

Large irrigation project estimates – 345 to 241 USD per family					
	Year 1	Year 2	Year 3	Year 4	Total
Identification and localization of water sources	271000	292000	262000		825000
Construction of irrigation systems	5200000	5600000	3900000	4200000	18900000
Training and education for communities	381000	823000	768000	200000	2172000
Maintenance of the project	1800000	1800000	1800000	1800000	7200000
Total in Bolivianos	7652000	8515000	6730000	6200000	29097000
Total Discounted (5% discount rate)	7287619	7723356	5813627	5100755	25925357
Total Discounted in USD					3757298